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DID GROUCHY BY DISOBEDIENCE OF ORDERS CAUSE THE DEFEAT OF NAPOLEON AT WATERLOO?

NAPOLEON'S object was to begin the Waterloo campaign with a signal victory which would cripple, and perhaps destroy, the Prussian army. The result he knew would be the retreat of the Prussians in a direction which would separate them from the Anglo-Dutch army under the Duke of Wellington.[1] His object was not—as many writers have claimed—to wedge himself in between the two armies and to defeat first one and then the other. These two armies were scattered along the frontier of Belgium for over a hundred miles, extending from Liège to near Ghent, with a depth of almost forty miles from Charleroi to Brussels.[2] They outnumbered Napoleon's forces nearly two to one, and had he attempted to wedge himself in between them it is obvious that he would have been crushed. He, therefore, selected the Prussian army because it lay in scattered divisions nearer the frontier and was accordingly the more exposed and because it had not concentrated as the army under Wellington was then doing.

On June 15, 1815, the Emperor entered Flanders with an army of one hundred and twenty-four thousand five hundred and eighty-eight men, of which twenty-three thousand five hundred and ninety-five were cavalry, including the horse artillery of the reserve, and three hundred and forty-four guns.[3] The corps of Prussians under Ziethen, which was

[1] Napoleon's Correspondence, vol. xxxi. pp. 195–198; Ropes, Campaign of Waterloo, pp. 2–15.

[2] William O'Connor Morris, British Historical Review for January, 1895.

[3] Charras, Histoire de la Campagne de 1815, Waterloo.

considerably in advance of the rest of the Prussian army under Blücher, was vigorously attacked and forced to fall back on Sombreffe, where the main body of the Prussians was concentrating.

On the afternoon of the following day—June 16—Marshal Ney attacked the English under Wellington at Quatre Bras, but through disobedience of orders and mismanagement was unsuccessful in driving them from their position. The same afternoon Napoleon defeated the Prussians at Ligny. The battle was indecisive owing to the unfortunate blunder of a staff-officer which kept D'Erlon's corps (Ney's reserve) marching and countermarching between Quatre Bras and Ligny without so much as pulling a trigger. The Prussians, however, lost one-third of their troops and were forced to retreat before they could co-operate with the allied army under Wellington, which was scattered from Quatre Bras westward towards Nivelles and Hal.[4] Napoleon then detached Marshal Grouchy, who commanded the right wing of the French army, with two corps, those of Vandamme and Gérard, and ordered him to proceed to Gembloux, to pursue the Prussians, to explore their march, and to instruct him (the Emperor) respecting their manœuvres; at the same time warning him that a junction of the Prussian and the English armies would be fatal to the French.[5]

Grouchy was unnecessarily slow in taking up the pursuit. His troops, it is true, were much fatigued, but when they did get under way their progress was so slow that they only got as far as Gembloux, and there spent the night of the 17th. For this Grouchy has been generally condemned, and, in our estimation, correctly, as the distance from St. Armand to Gembloux is *only eight miles*. Early on the morning of the 18th he received information that the Prussians were retreating on Brussels. Here again he was strangely negligent, for, although this news was received before sunrise, which at that season of the year occurs at 3.48 A.M., his troops were so slow in starting that Gérard's corps did not leave Gembloux until nine o'clock.[6]

At Walhain, Grouchy heard the sound of the cannon at Waterloo, and was strongly urged by Gérard to march to the aid of the Emperor.[7] The son of Grouchy says that "the commander of the Fourth Corps uttered haughtily and in a fashion little in harmony with the respect due to his chief and with military discipline, the advice that the right wing ought to march to the sound of the cannon to effectuate a junction with the Emperor. Grouchy did not find the advice bad in itself but the form employed to present it."[8] *Piqued by wounded vanity alone*, Grouchy refused to aid the Emperor, to whom he owed everything. He continued his way to Wavre where he vigorously attacked the Prussian corps under Thieleman, while he permitted the corps of

[4] Sibourne, History of the War in France and Belgium, 1815.
[5] Ropes, pp. 210, 211. [6] Ibid., p. 251. [7] Ibid., p. 256.
[8] Le Maréchal de Grouchy, Mémoires, pp. 15, 59.

Bülow, Pirch, and Ziethen to effect a junction with the English at Waterloo. Here again has Grouchy been strongly condemned for his seemingly unaccountable neglect as he failed to make proper cavalry reconnaissance in order to ascertain the direction taken by the main body of the Prussians. In pursuing an enemy it is evident that any one not a fool would take the trouble to find the direction in which the enemy had gone. This is just what Grouchy did *not* do. He then spent the night of the 18th at Wavre, satisfied with having held Thieleman in check, and never appeared at Waterloo at all.[9]

Meanwhile, Napoleon had been very much occupied. On the afternoon of the 17th he ordered his army in pursuit of the English troops, which Ney, in direct disobedience to the orders of the Emperor, had permitted to retreat unmolested from Quatre Bras northward to Waterloo. On the following day, the 18th, Napoleon came up with the English army, which had halted before the Forest of Soignes, at Waterloo, and gave it battle. The Emperor managed the French army with his usual masterly skill, and the contest was slowly but surely going against the English when the Prussians arrived on the field of battle.[10] There were three corps under Bülow, Pirch, and Ziethen, numbering over fifty-five thousand fresh troops, which Grouchy had permitted to march entirely unmolested ever since the battle of Ligny on the 16th, to join the English army. The English could be held in check, but it was absolutely necessary to fend off the Prussians. The Emperor was thus compelled to go in person towards Planchenoit, one and a half miles distant, and there to fight another battle against the Prussians,—a force but little inferior to his whole army at Waterloo,[11] and greatly superior to the troops at his disposal at Planchenoit.[12] Ney, "the bravest of the brave," the hero of the Beresina and the awful Russian campaign, was left in command at Waterloo. Yet in spite of his almost unparalleled experience in *over five hundred battles*, "Ney, in fact, contributed apparently little, except his example of desperate courage, to the success of the day."[13] "He made terrible blunders just at the time when the English troops were most exhausted and about to give way."[14] The manner in which he used up *all the Emperor's reserves* was absolutely inexcusable. Indeed, Ney seems to have been most thoroughly demoralized and totally incapable of the splendid deeds of his former campaigns. Had Napoleon been on the field of Waterloo in person, military writers concur in the opinion that such blunders would never have been made.[15]

In the following argument we are to prove that Grouchy disobeyed orders, in that he permitted the junction of the Prussians with the English, and that had Grouchy obeyed orders Napoleon would have won the battle of Waterloo.

[9] Ropes, p. 215. [10] Ibid., p. 309. [11] Ibid., p. 301. [12] Ibid., p. 338.
[13] Ibid., p. 314. [14] Ibid., p. 314. [15] Ibid., p. 314.

Grouchy disobeyed the orders given him by the Emperor because, in the first place, he did not ascertain what the Prussians retreating after the battle of Ligny were intending to do. He did not know until he arrived before Wavre on the afternoon of the 18th that any of the Prussians had succeeded in effecting a junction with the English army.[16] No valid excuse can be given for his conduct, as he should have known about the movements of the Prussians. In an order from Napoleon, dated Ligny, June 17, he was instructed that "*It is important to penetrate what the enemy is intending to do: whether they are separating themselves from the English, or whether they are intending still to unite to cover Brussels or Liège, in trying the fate of another battle.*"[17]

Although Grouchy's assertion that he never received this order has been upheld by some writers, the evidence against it is too strong to be disregarded.[18] Grouchy himself acknowledged that he sent to Napoleon the following reply, dated Gembloux, June 17, in which he said, "If the mass of the Prussians is retreating on Wavre, I shall follow them in that direction, in order that they may not be able to gain Brussels, *and to separate them from Wellington.*"[19] This reply corresponds exactly to the answer any one would give after receiving the Emperor's order from Ligny. It shows beyond a doubt that Grouchy received the order in question, and that, moreover, he understood it. Even if Grouchy had never received this particular order; if he had received his orders verbally from the Emperor while at Ligny, as he claimed he did, this reply leaves no doubt that he understood Napoleon's plan of keeping the Prussians separated from the English. This is just what Grouchy did *not* do. It is only natural that, as a culprit realizing that his disobedience had decided the fate of Waterloo, of the Emperor, and of France, perhaps even of Europe, he should have denied most vehemently that he ever received this order. The case, however, is too strong against him, and we cannot but accept the overwhelming evidence of every other French officer in the campaign, and of the best military writers.[20]

In the second place, Grouchy disobeyed orders, for he did not prevent the junction of the Prussians and the English. At one P.M., when the battle of Waterloo was in progress, Bülow's corps of Prussians appeared on the heights of St. Lambert on the French right, coming to co-operate with the English. They were followed at four P.M. by Pirch's corps, and at 7.30 by Ziethen's corps, making a total of over fifty-five thousand fresh men.[21] These troops had done absolutely no

[16] Ropes, pp. 254–256; Sibourne, vol. i. 318 et seq. [17] Ropes, p. 310.

[18] Fragments historiques relatifs à la Campagne de 1815 et à la Bataille de Waterloo.

[19] Sibourne, Chesney, Clausewitz, Quinet, Ropes, and Comte Gérard's Dernières Observations, p. 15.

[20] Gérard, Chesney, Quinet, Clausewitz, and Ropes.

[21] Charras, vol. i. p. 327.

fighting since the battle of Ligny, on the 16th. They had been permitted to march for nearly two days unmolested to join the English. Yet Grouchy had been fully warned that the Prussians would attempt a junction with the English army and that such a junction would be fatal to the French.[22] If Grouchy, when he heard the cannon at Waterloo at noon on the 18th, had taken the advice of his two corps commanders, Vandamme and Gérard, and had marched for Waterloo by any of the country roads, of which there are plenty thereabouts, he could have prevented this junction. There is but one road from Wavre to St. Lambert and Planchenoit. This road leads through the defiles of the river Lasne, and along it the Prussians would be forced to advance. Had Grouchy seized this road he could have prevented the Prussians from taking part in the battle that day.[23] But his personal vanity had been piqued by Gérard, and he kept on to Wavre, refusing to aid his Emperor. Like Marmont, in 1814, by his disobedience he hurled the Emperor from his throne.

In the third place he disobeyed orders, because he never appeared at all on the field of Waterloo. He should have done so, because he received an order, dated Waterloo, June 18, one P.M., to the effect that "the Emperor directs me [Marshal Soult, chief of staff] to tell you that you ought always to manœuvre in our direction. It is for you to see the place where we are, to govern yourself accordingly, and to connect our communications, so as to be always prepared to fall upon any of the enemy's troops which may endeavor to annoy our right, and to destroy them. At this moment the battle is in progress on the line of Waterloo. The enemy's centre is at Mt. St. Jean: manœuvre, therefore, to join our right." (Signed, The Marshal, the Duke of Dalmatia.)

P.S.—"A letter which has just been intercepted says that General Bülow is about to attack our right flank: we believe that we see this corps on the height of St. Lambert. So lose not an instant in drawing near us and joining us, in order to crush Bülow, whom you will take in the very act." [24]

Napoleon would have won the battle of Waterloo had Grouchy prevented the junction of the Prussians with the English army, because he would not have had to fight two battles at once. Few persons realize that the so-called battle of Waterloo was in reality a double battle, somewhat like Jena and Auerstädt. Napoleon fought one battle at Waterloo against the English. On the arrival of the Prussians he was forced to go in person towards Planchenoit and there fight another battle against the Prussian army, leaving to Ney the conduct of the troops at Waterloo. It is a well-known maxim in war that a very great or decisive victory cannot be gained unless one commander makes a serious blunder, of which the other takes immediate advantage. It is very

[22] Ropes, p. 310. [23] Ibid., The First Napoleon, p. 269.
[24] La Tour d'Auvergne, pp. 270, 271; Sibourne, vol. i. pp. 400, 401.

evident that the fact of the Emperor's having to fight two battles at once, instead of concentrating his attention on one alone, enormously increased the possibility of a mistake. Moreover, Napoleon did not have the able lieutenants of his former campaigns. Desaix, Kléber, Lannes, and Bessières were dead, Masséna and Macdonald had taken the oath of allegiance to the Bourbons, and Murat had split with the Emperor. Napoleon's personal attention was, therefore, imperative. To Grouchy alone all blame must be attributed, for had he prevented the union of the Prussians with the English, the Emperor would have had to fight only one battle at a time, and could have given his entire personal attention to that one battle.

In the second place, Napoleon would not have been forced to fight with seventy-one thousand nine hundred and forty-seven men against two armies numbering about one hundred and twenty-five thousand, —nearly two to one against him. He would have had seventy-one thousand nine hundred and forty-seven good soldiers pitted against a raw, undisciplined army of sixty-seven thousand six hundred and sixty-one men under the Duke of Wellington, which was not only inferior in mere numbers, but far inferior in *morale* and experience. The chances would have been greatly in favor of the French. Then, too, the French army was commanded by the acknowledged master of modern warfare, whose brilliant successes at Rivoli, Marengo, Austerlitz, Jena, Friedland, Wagram, the Borodina, and Dresden had dazzled the whole world. Until then Napoleon had never been defeated in any great decisive battle except Leipsic, and the French were strong in their confidence of the Emperor's success. Two of the best writers on the Waterloo campaign—Shaw-Kennedy and Sibourne, both Englishmen—concur in saying that had Grouchy kept the Prussians away the English army would have been badly beaten. This view is also held by the ablest writer of all, Mr. Ropes.[25]

Moreover, the Emperor would have had sixteen thousand more reserves to hurl against the fast-weakening English army.[26] Instead of having *to use up completely* two divisions of the Sixth Corps, two divisions of the Fourth Corps, the whole of the Young Guard, and three battalions of the Old and the Middle Guards, with two batteries, in checking the Prussians and holding Planchenoit,—which was of great importance,—Napoleon could have held them in reserve until the proper moment.[27] Histories of Napoleon's campaigns furnish abundant examples of the victories won by the brilliant charges of the Imperial Guard under Bessières at the critical moments, of which Napoleon knew so well how to take advantage. The Imperial Guard was the finest body of veterans the world has ever seen. They had been trained in the dazzling campaigns of the greatest military genius that has ever lived, and were taught to believe themselves absolutely invin-

[25] Ropes, p. 311. [26] Ibid., p. 313. [27] Ibid., pp. 311, 312.

cible. When we realize that had the Prussians been kept away from Waterloo the Emperor could have used the whole of the guard, we can then understand how different the result might have been had Grouchy obeyed orders.

Furthermore, had Napoleon been able to stay in person at Waterloo he would have utilized to great effect the immense tactical advantage gained by the capture of La Haye-Sainte.[28] Although it commanded the English line in such a way that a few batteries placed on its crest would have enfiladed the English line and completely demoralized it, yet Ney most unaccountably failed to seize the advantage. Any student of Napoleon's campaigns will be thoroughly convinced that the acknowledged master of modern warfare would never have made such a mistake. He had never yet failed to seize such an advantage on the field of battle, and it is scarcely probable that he would have failed at Waterloo.

Had the Prussians been prevented from uniting with the English, the best military writers, like Sibourne, Shaw-Kennedy, and Ropes, concur in the opinion that the Emperor would, in all probability, have badly beaten the Duke of Wellington before six o'clock. "To the lack of his presence at Waterloo the loss of the battle is therefore attributable,"[29] and Grouchy alone is responsible for Napoleon's enforced absence from Waterloo.

From the facts that Grouchy disobeyed the orders given him by the Emperor, and thereby permitted the union of the Prussians with the English; that the arrival of the Prussians and the non-arrival of Grouchy forced Napoleon, with a greatly inferior force, to fight two battles at the same moment and to absent himself from the field of Waterloo; and that if the Emperor had had his full force to employ against the English alone, and his own presence to direct the manœuvres in person, the result would, in the estimation of the best military writers, have been far different, lead us to conclude beyond the slightest doubt that Grouchy, by his disobedience of orders, caused the defeat of the Emperor Napoleon at Waterloo.

[28] Ropes, p. 327.
[29] Sibourne, Shaw-Kennedy, and Ropes.

FREDERIC L. HUIDEKOPER.

HIS ONE BRAVE ACT.

THE warm air is still and oppressive about the little camp where, on a small stream, a group of horse-thieves have located, preparatory to a descent on the ranches in that vicinity. The scenery is the monotonous arid plain so common in Arizona, with here and there a cactus-bush, the stream flowing along deep down in the cañon, and only accessible by the side cañon of the little branch stream entering at this point. The men are sitting about the camp-fire, preparing their evening meal.

The picture is a strong one: the rough faces and picturesque costumes of these hardy, daring adventurers of the dreary plains, lit up by the flare of the fire in the evening twilight, and set off by the immensity of the sandy waste about them and the limitless gray-blue dome above, is a scene of wonderful effect.

So it impressed a man now approaching this party. He is quite different from the rest, though strong and weather-beaten too; his face shows a higher order of intellect, he is younger too, and his bearing is that of a soldier. As he views the group before him he cannot refrain from knitting his brows, with a slight quiver of his frame, but he shakes off the feeling that his thoughts gave rise to, and walks up to the camp-fire.

"Can you take in a stranger?" he said.

"Why certainly, pard; sit down and make yourself at home," said one of the men.

"I have been out shooting and got separated from the rest of the men."

"Well, we'll take care of you," replied another.

So he took his place among them and was soon at his ease. Supper was ready before long and he joined them.

"Redfern," said one of the gang, after a time, "to-morrow you will have to subsist on the country, while the rest of us make a rapid circuit of the settlements hereabouts to throw the people off the scent when we come back for business. How will you manage?"

Ferber, the man who had just joined this band of freebooters, not suspecting their real character, spoke up,—

"He will have to try a trick suggested by Mark Twain (I think it

was he), once upon a time, in one of his stories. I will tell it as near as I can recollect it:

"My friend Twitchell had a queer experience lately,—he is always having queer experiences. He was at a meeting of ministers in Minneapolis, and they were discussing all sorts of church affairs, when one of them from out West somewhere rose to make a few remarks. He said: This meeting reminds me very much of a tramp, who was once wandering about in our country, foot-sore and hungry, when he came upon a lonely shanty. He was so hungry that he simply *had* to have something to eat, but knowing the prejudice against men of his calling he made up his mind that he would have to make some extra exertion. As he approached the house his heart sank, for he saw it was wash-day, and the woman of the family was working away at a tub just outside the door. The prospect was gloomy enough, but the pangs of hunger were strong.

"He smiled pleasantly as he approached, but the woman did not stop rubbing at the clothes.

"'Nice day,' he ventured.

"'Yes.'

"'Husband out at work?'

"'Yes.'

"There was a pause during which he sat down on a log and commenced to rack his brain for some happy thought, when the woman left her tub, started a fire, and hung a kettle of water over it. The thought of soup and dinner at once gave him an inspiration. He rose and remarked indifferently,—

"'Did you ever eat stone soup?'

"She looked up quickly, showing for the first time a little interest.

"'Stone soup? No; what is stone soup?'

"'Oh, nothing, I thought perhaps you knew, because it *is* so good.'

"He sauntered along as if he were going, but she started after him.

"'What is stone soup?'

"'Oh, it's of no consequence, only a very good soup.'

"'But what is it? how is it made?' she cried, now that her curiosity was thoroughly aroused.

"'Well, now, stone soup—— Don't you know how to make stone soup?'

"'No, I tell you, I never heard of it; how do you make it?'

"'Do you really want to know? I'll tell you then. Have you got a good big piece of soup meat?'

"'Yes.'

"'And some vegetables?'

"'Yes.'

"'And onions?—no stone soup is good without onions.'

"'Yes, I've got onions.'

"'Very good. Now you go and put your soup meat in that kettle of water there and heat it slowly, while I go and select the stones: only a particular kind will do, but I saw some as I came along, and I think I'll get enough for one soup.' He gathered a handful of pebbles, selecting them with great care, washed them well, and put them into the pot.

"'Now the vegetables, not forgetting the onions.'

"By the time it was all done the husband came in from the farm and the three sat down to enjoy the soup.

"Now, gentlemen, said the minister from the far West, I have heard a great deal about orthodoxy here to-night, but I tell you orthodoxy has about as much to do with religion as the stones had to do with that soup!"

"It will take more than that to rouse the curiosity of the women folks about here," remarked one of the men, gruffly.

They finished their supper and lounged about, smoking and talking. Ferber noticed that one of the men, the worst looking of the lot, carefully avoided his glances, and once or twice he thought he recognized his face, but was at a loss to place him. This was Redfern Roberts, the leader of this gang of thieves, a bold adventurous spirit, delighting in danger. He had once been a soldier, having enlisted after a drunken bout, and was stationed a short time at Fort Adams. His restless spirit, however, and desperate character soon asserted themselves, and to avoid greater trouble, resulting from a drunken row in which he was involved, he deserted from the service and went to try his fortune in the West. There, after a wild career in mining-camps, where he had more than once killed his man, he was soon compelled to join the wild spirits in whose company he now was, and his daring soon made him their leader.

Ferber, the man who had joined the gang at their supper, was a soldier stationed at Fort Apache in Arizona. He had nothing in common with the horse-thieves, but had been out on a hunt and had come across their camp. Although he suspected the general character of the men, he had no idea that they were at that very moment meditating a raid. He had gone astray from the hunting-party, but hoped to find them at a ranch his lieutenant talked of looking up, and which he now learned was not far distant. His first service was at Fort Adams in the artillery, and afterwards he went West with the regiment, but when his battery was made a mounted one he became so fascinated with the mounted service that, when the regiment moved again he transferred to the cavalry and joined his troop at Walla Walla, soon afterwards going to Arizona with it.

Ferber remained overnight in camp and started off at break of day to look up the Arlington ranch; he reached it about noon, and there found his lieutenant talking over old times with Arlington and his

wife and their young niece. The rest of the hunting-party had gone on to the post. The lieutenant, Dudley Denham, was the son of an officer of artillery who had been an intimate friend of the father of Alice Lemoine, Arlington's niece, but he had not met Miss Lemoine since they were children together at Fort Adams, where their fathers were then stationed.

When Ferber heard in the kitchen that Miss Lemoine was there, he came to the parlor door and asked his lieutenant's permission to come in and see her. Denham was a little surprised at this request, but he knew Ferber was a good soldier, and so he told the ladies of his request, and he was at once admitted. He then related the following incident:

While he was stationed at Fort Adams he was one evening standing near the barracks in the casemates, when an officer approached from the interior of the fort on his way to the sally port leading out on the glacis, where the officers' quarters were, who, as he passed Ferber, suddenly stopped and listened. Both then distinctly heard a child's cry. The officer walked quickly to a well near by and called to Ferber, "Come here, my man, get down there, quick; take my hand." It was all done in a moment, and the child was pulled out dripping wet. It was Captain Lemoine's Alice and the officer was Captain Denham, who never forgot Ferber's prompt action and his perfect confidence.

The incident added a new interest to the already growing intimacy between the lieutenant and Miss Lemoine, and the former determined that all his hunting trips would hereafter take in the Arlington ranch.

On the following day at dusk the lieutenant and his man departed, Arlington accompanying them to start them on their way. The three were hardly out of sight when Mrs. Arlington saw, approaching from the opposite direction to that which they had taken, a lonely figure plodding wearily along in the sandy soil. It was Roberts.

He had started off early the day before, and, although there were no provisions left in camp, he had hoped to find shelter and food on the way. The country was new to him, however, and the settlements were few and far between, so he had trudged along many a mile, and it was nearly dark on the second day after leaving camp before he came to the ranch, the first habitation he had seen in that time. Mrs. Arlington met him at the gate, but hesitated to open it, because only her niece and she were at home. His rough manner, his dust-begrimed, hardened face, and his general air of a desperado of the worst character filled her with fear. Still, she hesitated, for he was, after all, a human being, hungry and tired, and it was a long way to the next ranch. Perhaps the lieutenant's visit had left a pleasant feeling of gratitude and a warmth about her heart that inclined her to more than ordinary kindness and charity. She looked searchingly at his rough features, but they gave her no kindly look in return. Her woman's

heart won the day, however, and she silently led him in. Her husband and the men of the ranch came in soon after, and they readily persuaded the wanderer to stay overnight. In the morning he departed on his mission for the gang.

The lieutenant often came over from his post to spend a few days at the ranch, and Alice Lemoine grew prettier day by day. To him the days passed all too quickly, and when, one day in August, he started on his way to Fort Apache he knew that he had left behind one whom he would some day not far distant take back with him if he could persuade her,—and her pretty eyes looked as if they laughed consent.

* * * * * * * *

It is another sultry day; the hot sun is beating down on the baked, sandy soil, and not a breath of air is stirring. Mrs. Arlington had gone in the early afternoon to a neighbor's house, and was on her way back when suddenly one of those queer whirlwinds, so common on these arid plains, arose and sent a spiral column of dust whirling along, its summit high up in the sky, changing in an instant the whole aspect of the scenery and, indeed, the entire landscape. The winds carried her along for some distance, stunned and bruised, and finally left her, hardly able to move, behind a clump of cactus-bushes.

That afternoon the gang of horse-thieves had made a raid on a ranch not far from the Arlington's, but they were discovered before they could collect the stolen horses, and were compelled to take to flight. They had a good start, however, and soon would have been out of the reach of their pursuers, when suddenly they heard a woman's cry. They halted and had a hurried consultation, and their leader insisted on seeing what was the matter with the woman, saying that, if need be, they could carry her along. They found Mrs. Arlington more dead than alive, dazed and bewildered, unable to find her way; she begged them to take her to her home. The leader hesitated for one moment; then he quietly told his followers to make good their escape, but added that he himself would take his chances and carry the woman home. They stared at him in amazement. What had come over him? He had never been tender-hearted before! They pleaded with him for his foolhardiness, telling him he was sure to be caught and would as surely swing, but he was deaf to their entreaties. He merely said, "She gave me food and shelter, and I cannot leave her here to die." His mouth was firm set, his face was like ashes. He knew that to return was death,—death in its most ignominious form,—but he swung the woman on his saddle and started for her home.

What were his thoughts on that ride? What had prompted him, who had no single good deed to his credit, to do this one brave act of gratitude? Whatever his thoughts were, there was the woman who had given him food and drink. He heard the voices of his pursuers as they passed the cactus-bushes, where they evidently halted for some

time. He listened attentively, but the sounds were soon lost in the distance as they went on in the pursuit. He put his horse to a fiercer gait. Arrived at the house, Mrs. Arlington, in great excitement, hurriedly locked him into a room. He hoped that the *posse* would continue the pursuit of his followers for several days, and he, meanwhile, might effect his escape in another direction. This one hope, however, was soon dissipated, for not long after midnight he heard voices about the house, and learned from their conversation that his pursuers had tracked him.

Mrs. Arlington was induced to tell where he was hidden, although she begged for mercy for him, telling how he happened to come back to the house. He declined to yield himself up, so they were forced to take him. He killed the man that opened the door of his room, but was himself wounded in the right arm through the window on the other side, which, by previous arrangement, was opened at the same instant, and, although he still resisted, he was soon overcome and conveyed to the jail.

Denham, of course, heard of the capture of a desperado at the Arlington ranch, and soon came over to hear all about it from the pretty lips of Alice Lemoine. Roberts's sentence was death, and Mrs. Arlington was overcome with grief. Every one at the ranch was deeply affected, and all agreed to make a strong effort to save the robber's life. His one brave deed was all the grander for the life of wrong-doing that had gone before.

Meanwhile, Ferber, who had been to visit Roberts, recognized him as a deserter, remembering him and all his evil exploits in the short time he was at Fort Adams. "He is not good for much," he said to himself as he came away, "and yet he did *that!*" and then he stopped in the road and wondered how it was possible.

Mrs. Arlington could not rest. She appealed to all her friends. She used all her influence with every one that came within her reach to plead for Roberts's life, and went herself to the governor, but it was all of no avail.

Roberts's character and past life did not entitle him to any consideration.

"And yet," said Alice, "he did what few far better men would have done!"

You may be sure that when Alice pleaded Denham was ready to do great things. He longed to accomplish what he knew would please her far beyond anything else that he could do, but how? His love gave him inspiration: he went to his captain and told him the whole story, and he, a kind-hearted man, fully alive to the bravery of the deed, told the colonel, and both went in person to plead with the governor.

When these men, whose business in life it was to be brave, and who

had long and honorable careers behind them, came to plead a horse-thief's cause for his *one* brave act, the governor yielded, and Roberts's sentence was commuted to imprisonment for life.

Of course, Alice soon learned how it was that Denham had enlisted the services of his captain and colonel in the good cause, and as a consequence it was not very long before a new and happy bride entered one of the little cottages in the officers' row, and often as Denham and Alice sat on their piazza on a hot summer day and saw a whirlwind suddenly rise and sweep across the plain, they thought of Roberts, forgetting all the wickedness of his life and remembering only his one brave act.

JOHN P. WISSER,
Lieutenant U.S.A.

THE ART OF HORSEMANSHIP.

(FROM THE LONDON QUARTERLY REVIEW.)

In the following pages it is proposed to discuss what the fox-hunter or the steeple-chase rider might call the pedantry of horsemanship, and to treat riding not as a sport, but as an art. A better title than the "Art of Horsemanship" would perhaps have been the "Art of the Manége" or "The Haute École." But both these expressions might have given rise to the mistaken idea that we were about to deal with a purely French system of training the horse, whereas, as we hope to show, the French have learnt as much from us in the past as we from them, while both of us are deeply indebted to the Italians of the renaissance. If France can point to the names of her great horsemen,—La Broue, Pluvinel, and Guerinière,—we can with equal pride and justice claim that our Blundervile wrote his "Foure Chiefyst Offices belongyng to Horsemanshippe" nearly twenty-eight years before Solomon de La Broue produced his "Cavelerice François" in 1593, and that John Astley brought out his "Art of Riding" (founded upon "Il Cavalerizzo" of Claudio Corte) in 1584, thirty-nine years before the superb "Maneige Royal" of Antoine Pluvinel appeared in 1623. But it were sufficient to rest the case for our originality entirely upon the masterpiece of the Marquis of Newcastle.

The fact is that horsemanship as an art has always been cosmopolitan and eclectic. Born originally in Greece, it had its renascence in Italy, and Grisoni and Fiaschi must be acknowledged the true fathers of the art, however ready we may be to admit that the courts of Francis I. and Henry IV., by early adoption of the offspring, adorned its development with the courtly grace, lustre, and urbanity of French influence which made the *manége* the art of princes, as another nation and age made hawking the sport of kings.

"They say," wrote Ben Jonson, "*Princes* learn no Art truly, but the Art of *Horsemanship*. The reason is, the brave Beast is no flatterer. He will throw a *Prince* as soon as his groom."

The Greek theory of education, as we find it in Plato, was of a twofold kind,—"one of gymnastics relating to the body, the other of music for the sake of a good state of the soul;" briefly, as Mr. Pater expresses it, "a gymnastic fused in music." This system of education the Greeks applied no less to the training of horses than of men.

In the earliest extant treatise on riding, Xenophon pointed out that horsemanship, like dancing, was dependent fundamentally on the play-impulse, that for anything to be done well it must be done for pleasure; "what the horse does under compulsion is done without understanding, and there is no beauty in it any more than if one should whip and spur a dancer." The horse must become an artist, too, in his manner, and use his limbs with rhythmical freedom.

So far was this carried that Athenæus relates how the Sybarites taught even their horses to dance at their feasts to the music of the flute; and on one occasion their enemies put their knowledge of this habit to humorous account, by taking out flute-players to battle and winning the cavalry over to their side by causing the horses to dance to a favorite air, just as the Pied Piper played the rats of Hameln into the Weser.

Xenophon anticipates the later refinements of the *manége* in another respect, by advocating persuasion and sympathy in training a colt rather than the force and cruelty which prevailed in the early Italian school; but in his directions he does not advance beyond the simple exercises of the circle or *volte* (as his latest translator renders the word πέδη) and the "career," although going minutely into the question of changing leg. The only paces of the horse known to the Greeks seem to have been the walk, trot, and gallop.

We need merely stop among the Romans to observe that the term of "riding the great horse" (which was in constant use in England till the eighteenth century to express *manége*-riding) is borrowed from the Latin *magnus equus*, and that our word "canter" is by some derived from the Latin *cantherion* or pack-horse, and not, as by Dr. Johnson, from the pace used by pilgrims riding to Canterbury. The Romans, with their sense of the practical, regarded horsemanship more from the point of view of war and of locomotion. What little attention they gave to the pure art of riding was confined to the circus, and the circus, as we know, soon fell into the hands of professional athletes, when riding, like dancing, came to be regarded as a servile art. Yet there was a time when awkwardness on horseback had been as much a reproach to a Roman youth as illiteracy:

"Neque equitare nec literas scire."

One other legacy we have inherited from Roman riding. The game of *palus*, or pillar-play, which consisted in throwing a lance at a pillar and striking it in a particular place, gave way to the *quitana*, a development of *palus*. Hence came to us the mediæval exercise of the "quintanie,' which to this day survives in the exercise of heads and posts that forms part of the curriculum of our military riding-school.

The sun of the Roman empire set, so to speak, in the East, and it is to Byzantium we must turn our eyes for the continuation of the art of horsemanship as of the fine arts. In Constantinople accordingly we find that the games were augmented by feats of horsemanship, derived partly from the Arabs, who had for so many centuries idolized their horses, and partly from the Roman circus; and to these games were joined the French sports known as *conflictus Gallici*, which were carried on in France in great splendor under Charles the Bold (A.D. 840). It is interesting to note that Italy, which had furnished the Byzantine capital with artists, was in the twelfth century to receive in return some companies of Byzantine circus-riders who settled at Naples, which thus became the home of horsemanship during the fifteenth and sixteenth centuries.

During the Crusades and throughout the early Middle Ages the references to horsemanship are few and far between. Certain breeds of horses were, it is true, in request, but always with a view to their use in war, and not to their beauty in time of peace. In the thirteenth century Brunetto Latini, in his "Trésor de toutes Choses," thus speaks of the various breeds of horses in vogue:

"Il y a chevaux de plusieurs manières: les uns sont *destriers* pour le combat; les autres pour chevaucher à l'aise de son corps, sont palefrois (qui s'appelaient aussi *ambleurs*, *haquenées*); les autres sont *roussins* (ou courtauts) pour somme porter."

It was, however, the dawn of chivalry (as its name implies), which, by assuming for its exercises the similitude of war, made riding a new art, thenceforth inseparable from the education of nobility and from gentle breeding.

In the "Livre des Faits" of the Chevalier Jean le Maingre, Sire de Boucicault, Marshal of France, we catch a glimpse of the position which ornamental horsemanship had reached in France at the end of the fourteenth or beginning of the fifteenth century—a *mélange* of vaulting and acrobatic skill. The young gentleman—

"s'essayait à saillir (sauter) sur un coursier tout armé; *item*, saillait, sans mettre le pied à l'étrier, sur un coursier armé de toutes pièces; *item*, à un grand homme monté sur un grand cheval, saillait de terre à chevauchon (califourchon) sur les épaules, en prenant le dit homme par la manche à une main sans autre avantage: *item*, en mettant une main sur l'arçon de la selle d'un grand coursier, et l'autre emprès les oreilles, le prenait par les crins en pleine terre et saillait de l'autre part de coursier."

In the days of Rabelais, that mirror of mediævalism, horsemanship had already made considerable strides. In the education of Pantagruel, riding was to be a prominent feature from very earliest childhood: first by means of a wooden horse; and, later, on reaching years of discretion, under the tuition of an *escuyer gymnaste*, he is to

practice all the feats of horsemaship to which the then evolving *manége* had attained.

"And with them a young gentleman of Touraine, named the Esquire Gymnast, who taught him the art of riding. Changing then his clothes, he rode a Naples courser, Dutch Roussin, a Spanish gennet, a barbed or trapped steed, then a light fleet horse, unto whom he gave a hundred Carières, made him go the high saults, bounded in the air, free a ditch with a skip, leap over a stile or pail, turn short in a ring both to the right and left hand. . . . As for the prancing flourishes, and smacking popisms for the better cherishing of the horse, commonly used in riding, none did them better than he. The voltiger of Ferrara[1] was but as an ape compared to him. He was singularly skillful in leaping nimbly from one horse to another without putting foot to ground, and these horses were called desultories. He could likewise from either side, with a lance in his hand, leap on horseback without stirrups, and rate the horse at his pleasure without a bridle, for such things are useful in military engagements."

Not until the year 1539, when the ideas of the renaissance are mellowing down from their first ferment, do we meet with the establishment of an academy for instruction in the art of horsemanship. The founder was an Italian, Cesare Fiaschi, who soon gained a notoriety all over Italy. His pupil, Pignatelli, carried to a still higher point the work of his master at Naples. He speedily attracted to his academy the leading equerries of the court of France to learn, and afterwards to introduce into their own country, the pastime destined to become one of the most popular in the courts of kings and princes. Two French noblemen, La Broue and Pluvinel, were among the first pupils of Pignatelli, and both on their return to France founded schools, where a system of education was pursued, comprising, in addition to other subjects, riding, fencing, and dancing.

Pluvinel held a most liberal view of a gentleman's culture, which he details to Louis XIII. He wished to found in different parts of France four academies or schools of "vertu," as he called them, for each of which he considered that he would require twenty horses at first, grooms, proper officers and servants, a professor for fire-arms, a dancing-master, a vaulter, a mathematician, and a man of letters. Every morning was to be taken up with horse-exercise and the practice of the ring, and the rest of the day with training in the use of fire-arms, dancing, vaulting, mathematics, and lectures on literature.

The school founded at Versailles soon became the centre of learning for horsemen, and maintained its proud position until the Revolution. There, from the reign of Louis XIII., every king and prince was trained; it was universally recognized as the temple of the art, and the office of Master of the Horse acquired almost pontifical dignity.

[1] No doubt an allusion to Fiaschi, who was a native of Ferrara.

"Silence reigned there during the lessons, the most exquisite politeness was observed, as if in the *salons* of the palace."

It is difficult to follow chronologically the history of riding in each country. Fiaschi was alone when he first started his *manége;* and whilst La Broue and Pluvinel carried his teaching into France, England was not far behind in cultivating this new departure in horsemanship. From incidental references in general literature we learn that in England, as in France, the Italian pupils from Naples were our first masters in *manége* riding. Henry VIII. enticed over two of Pignatelli's pupils, and from one of these were descended the Alexanders, the celebrated English riding-masters referred to in Blundevile and Cavendish.

In Elizabeth's reign, Sir Philip Sidney introduced into England the teachers Prospero and Romano. At a later date that prince of courtiers, the Earl of Leicester, retained in his train "Claudio Curtio," the author of a book[2] which was translated into English in 1584. Claudio Curtio is doubtless the same name as Claudio Corte. The art spread so rapidly that a gentleman was considered uneducated if he was not an adept in the exercises of riding and fencing. "At horsemanship when you exercise it," wrote Philip Sidney to his brother Robert in 1580, "read Crison Claudio; and a book that is called 'La Gloria del Cauallo,'[3] withal that you may join the thorough contemplation of it with the exercise; and so shall you profit more in a month than others in a year." How large an element the art of horsemanship was in Sidney's life we may estimate from his constant reference to it in his sonnets, where we often find metaphors drawn from the active art passing into and giving vigor and color to the "impassioned contemplation" of his verse. The whole of the Forty-ninth Sonnet in "Astrophel and Stella" derives its imagery from the *manége:*

"I on my horse and Love on me do try
Our horsemanships, while, by strange work, I prove
A horseman to my horse, a horse to Love;
And no man's wrongs in me, poor beast, descry.
The reins wherewith my rider doth me tie
Are humbled thoughts, which bit of rev'rence move,
Curb'd in with fear, but with gilt boss above,
Of hope, which makes it seem fair to the eye.

[2] Il Cavalerizzo nel quale si tratta della natura de' Cavalli, del modo di domargli e frenargli. Lyons, 1573. Translated into English by Thomas Bedingfield, under John Astley, 1584.

[3] La Gloria del Cauallo, opera dell' illustre *Pasqual Caracciolo*, diuisa in dieci libri, etc. Venice, 1566.

[4] "Crison Claudio" almost looks as if Sidney had confused the two separate works of Claudio Corte and Grisoni, unless "Crison Claudio" was a short manner of describing the two translations into English, which are sometimes found, as in the British Museum copy, bound together in one volume.

The wand is will; thou, fancy, saddle art,
Girt fast by memory, and while I spur
My horse, he spurs, with sharp desire, my heart:
He sits me fast, however, I do stir,
And now hath made me to his hand so right,
That in the ménage myself take delight."

Lord Herbert of Cherbury, who traveled much abroad and was intensely interested in equitation, names for exercise the "great horse, fencing, and dancing," but he places the "great horse" first, for the reason that "a good rider on a good horse is as much above himself and others as this world can make him."

During the period of activity in Naples and Paris the artists commenced a literature upon the subject which still survives. The first important work on horsemanship after the renaissance was by Federico Grisoni, a pupil of Fiaschi, published at Naples in 1552, under the title of "Gli Ordini di Cavalcare." Four years later appeared the "Gloria del Cauallo" of Caracciolo (the book alluded to in Sidney's letter), and in 1573 Claudio Corte published his "Il Cavalerizzo." The books, both of Grisoni and of Corte, were translated into English, the first by Blundevile, under the title of "The Foure Chiefyst Offices belongyng to Horsemanshippe" (1565), and the second by Bedingfield and Astley as "The Art of Riding" (1584). Blundevile, himself an accomplished rider, classifies horses into those for pleasure and those for service. He says that horses for pleasure require additional education,—"they muste bounde alofte with all foure, gallop the gallop galliard, fetche the Capriole, daunce the Coruetti;" but before he embarks upon his subject and describes the airs, he eulogizes its "worthiness," declaring that the art of riding is no vile art:

"Gryson useth the auctorite of the noble poet Virgill, who in his Eneidos calleth king Picus for a more excellency and greater praise, a tamer or breaker of horses. He giveth also a like title in divers places of his books to Mesaphas, the son of Neptune, god of the sea, who as the poets faine, begot upon Meduse the winged horse named Pegasus, which flying up to the heavens was transformed into those starres which are now called after his name."

Grisoni, before he takes leave of his reader, is careful to give the manner of riding before a prince; but as Gervase Markham has evidently been inspired from Grisoni, we will later on refer to Markham's account.

Corte, as interpreted by Bedingfield, gives one or two definitions of airs which are peculiar to his book, such as "Corvette, that motion which the crowe maketh, when without flieing she leapeth and jumpeth upon the ground;" and "Pesate, I suppose, was so called of the verbe *pesare*, which in our language is to weigh or balance . . . and so they called those liftings and lettings downe of the horse's feete in juste

time and order, *pesate.*" But Corte is at his best when he classifies the "aides." These consist of the voice, *appui* or hands, the rod, the leg, the spurs, and rough ground and water outside the *manége.* From the earliest time every horseman used a long, finely-tapering wand, with which he touched, tickled, and stimulated his horse, a touch in a different part being associated with every different motion to be produced. It was an aid very largely used by Pluvinel and the Marquis of Newcastle, and no air was performed without it.

Corte perfectly appreciated the æsthetic aspect of the *manége:*

"The principal use of horses is to travel by the waie and serve in the war: whatsoever your horse learneth more is rather pompe or pleasure, than honour or use. Yet do I think it allowable and therewith commendable, that some horses (cheeflie of princes and great personages having store) should be instructed in those regularities and exquisite motions for pleasure, as well to delight the lookers-on and make proofe of the rider's excellencie, as also thereby to show the capacities of the beast."

It must not be supposed that the only great horsemen of the past are those who have left written records of the *manége* and of their supremacy in the saddle. Grisoni deserves honor for his enthusiasm, yet no doubt equally great exponents of the teaching of Fiaschi and Pignatelli are lost to fame. So Pluvinel's school turned out many and great *écuyers,* but Solleysel, Menon Deschamps, Delcampe, Briac, Beaumont, Saunier, who all published books on riding, are the men to carry us up to the time of Robichon de la Guerinière, perhaps the greatest of French horsemen. It is not given to every rider to finger with equal delicacy the bridle and the pen, or to transfer to language understood by posterity the secret of that mastery of man over horse, which while living he could communicate so dexterously to the finely-organized animal.

Fiaschi's system was still imbued with the hard and iron discipline of the Middle Ages; to tire a horse, to use the spur, were the means he adopted to attain the ends he sought for. Here is his method according to Grisoni:

"Cause him to be brought forthe; . . . and if he be so froward and stubborne as he will not come nyghe the block, then rate him with a terrible voice and beat him with a good sticke upon the head between the ears, crying, 'Ah, villain! ah, traitor!'"

In one direction his teaching was ahead of his time, for he carried out his lessons both in and outside the *manége;* the mechanical teaching of the pillar, which certainly formed a part of his system, was very much abused by later *écuyers,* and the simple airs of the capriole and the corvet, the principal ones taught by Fiaschi, increased to a great number during the next century, and these complicated airs cramped and constrained the rhythm of the horse's movements rather than de-

veloped them. But the great difference between Fiaschi's teaching and that of the Frenchman, La Broue, lay here. Fiaschi began his training of the horse at the halt, all the turns being taught at the halt; and although early in the day *gallop-galliard* or *carere* was given to the young horse, yet it was some time before the animal really began to be taught when in motion. La Broue commenced his training at the walk, and with this change the brutality diminished. On the other hand, Pluvinel exaggerated the pillar exercises, and not until Solleysel's time do we find a strong tendency to give up these old methods of cruelty. Pluvinel's treatise, illustrated most beautifully by Crispin-de-Pas, is one of the classics of the subject: the plates show the education of Louis XIII. in the *manége* at Versailles, where all the equerries are portrayed and every figure is believed to be taken from life. Among those who have the names affixed to them we descry "Milord de Donckaster."

Pluvinel has chosen the form of a running conversation between master and pupil in which to impart his system, not unlike the dialogues in Saviolo "His Practice," one of the earliest books on fencing. The long colloquies between the King, Monsieur le Grand Écuyer, and Monsieur cover the whole ground of the art of horsemanship as M. de Pluvinel understood it. The pillar and wall theories are greatly relied upon, and the illustrations include these and many of the tournament exercises.

After some words upon the proper costume,—for M. de Pluvinel lays great stress upon the point that to be *bon homme à cheval* you must be of necessity *bel homme à cheval*,[5]—he continues:

"To be a good horseman and to know how to train a horse, each must do according to his own temperament, strength, and disposition; and with all these qualities you must have judgment, 'une drogue très mal aisée à rencontrer et dont l'on a bien peu pour beaucoup d'argent chez les apothicaires, ainsi que voulait dire le feu Sieur de Fontlebon, premier écuyer de la grande écurie d'Henri le Grand, père de votre Majesté.'"

A somewhat free translation will best describe the famous "horse-ballet":

"The Balet of horses was carried out by six chevaliers, who rode their horses at Courbettes, and six equerries, who made their horses go *terre-à-terre*. . . . The remainder of the caste comprised thirty horses, each led by two *laquais*, twenty-four pages on horseback, and men in

[5] John Evelyn speaks in his Diary of a visit to Faubert's "Manage" in London, in 1684, where the young gallants exercised at running at the ring and flinging a javelin at a Moor's head on horseback at full speed, and where he "saw the difference of what the French call 'bel homme à cheval' and 'bon homme à cheval,'—the Duke of Norfolk being the first, that is rather a fine person on a horse, the Duke of Northumberland being both in perfection,—viz., a graceful person and excellent rider."

rich liveries. All the horses were equipped in the same manner. The whole *cortège* first followed in order round the Place; and when they came opposite the King's box, the music changed to the air of the Courbettes. Then the six chevaliers courbetted, two in front, one behind them, and three in the rear, until they came opposite the King, when they took up their position for the dance. In the first figure, the six chevaliers rode all round one after the other in a circle in the Place. The six equerries then galloped around them, and at the end of the cadence (musical period) each equerry placed himself between two chevaliers, a little in rear, to keep the two circles distinct."

Then follow six other figures.

"The eighth figure is the only figure not in a circle, as three of the chevaliers placed themselves opposite the other three, and each then advanced towards the other and taking hands made one and a half voltes (circles) to the right, and changing hands, one and a half voltes to the left. Then they separated and made one and a half voltes to the right and regained the old places. The equerries then made short passades by twos, three times changing their companions. The last figure was the chain: the chevaliers passed in and out, and, arriving at certain points, turned to the right and returned where they came from—all being done in courbettes. Then the equerries performed the chain *terre-à-terre*, and finally all the caste retired in the same order and formation in which they entered."

This was the famous *Balet de Chevaux*, which was studied, rehearsed, and represented in less than twelve days, and witnessed by more than two hundred thousand spectators, who all contributed to the expense, and who, Pluvinel tells us, would willingly have had the whole performance repeated.

The picture which accompanies this account is exquisitely drawn and engraved. It is the scene of the Place Royal, one of the few pieces of old Paris which remain to-day, and lies just at the end of the Rue Sévigné, hard by the Maison Carnavalet, sculptured by Jean Goujon. Here was the spot chosen for this brilliant and artistic representation of riding by the chevaliers and equerries of the king's court. At one end was the temporary scaffolding with the king's box, and all round were ranged the people to witness the scene. The foreground is filled with coaches and sedan-chairs. At each corner of the Place are groups of four horsemen with instruments of music,—some with "piffres," others with drums. In the centre are the six chevaliers, of whom M. de Pluvinel, M. le Duc de Vendôme, M. le Bajamin, and M. le Marquis de la Valet are named and portrayed. In an outside ring at the intervals are the six equerries. All the riders are superbly dressed. The horses are richly and magnificently caparisoned. Beneath the plate is the following inscription:

"Le magnifique balet qui fut dansé à la Place Royalle l'an MDCXII. le 5 Août par les Sieurs de le Toin, de Linuanton, de M. de Pluvinel."

What a contrast is the picture painted by Pluvinel of this parade to the "musical ride" of our days! There were then the music, varying according to the pace alternately of the chevaliers and of the equerries, the superb costumes, and the succession of figures. The *Balet*, although learnt in a few days, had been the outcome of years of training, and the most renowned courtiers in the land were the actors. The "musical ride" of to-day consists of a series of movements performed at a walk, trot, and gallop,—passing in and out, moving in circles,—not one real rhythmical movement of the true *manége* art. Perhaps it is a hopeful sign that we have a "musical ride" at all.

About the beginning of the seventeenth century, La Broue and Pluvinel were still teaching only a few airs,—the *courbette* (*corvetti* of Grisoni), the *terre-à-terre* (*gallop-galliard* of Grisoni), *pirouettes*, and *piaffes;* and by the time Solleysel wrote (1664), three natural motions, the walk, trot, gallop, and seven artificial movements were recognized. The latter comprised the *terre-à-terre*, or short gallop; the *demi-air*, or a very slow canter; the *corvet*, performed by raising the forehand first, and as the fore legs touched the ground, then lifting the hind legs; the *capriole*, quaintly described by Blundevile as "the Goat's leape, but so much as goats be not everywhere to represente that kinde of leape I woulde wishe you therefore for your better understanding sometyme to beholde our little lambs whilst they runne and playe together, and you shall see they doe the same." The remaining three airs were the *croupade*, a jump with all four feet tucked under the belly; *balotade*, a leap with the hind legs stretched out, so as to show the shoes; and the "step and leap," a sort of combined air. Solleysel does not class the *piaffe*, *passage*, or *pirouette* as airs,—doubtless regarding them as steps only. Du Bartas puts concisely in verse the state of education of a horse at this time:

"The wise wax't rider, not esteeming best
To take too much now of his lusty beast,
Restrains his fury; then with learned wand,
The *triple-corvet* makes him understand;
With skilful voyce he gently chears his pride;
And on his neck his flattering palm doth slide;
He stops him steady still, new breath to take,
And in the same path brings him softly back:
* * * * *
Then of all foure he makes him lightly bound;
And to each hand to mannage rightly round;
To stoop, to stop, to caper, and to swim,
To dance, to leap, to hold up any lim:
And all so don, with time, grace, ordered skill,
As both had but one body and one will;

Th' one for his Art no little glory gaines,
Th' other thro' practice by degrees attaines
Grace in his Gallop, in his pace agility,
Lightness of head, and in his stop facility;
Strength in his leap and stedfast managings,
Aptness in all, and in his course new wings."

But it is time to turn from the crowd of French writers to a thoroughly English representative. Gervase Markham, soldier, country gentleman, and earliest of hack-writers, in one of his best-known books, "A Way to get Wealth," devotes a chapter to the riding of the great horse. Being a chronicler of country life and sport, with no special prejudice for any one form of exercise, we may take it that he is describing the art as then practiced by most country gentlemen of the age, and we may assume that by the early part of the seventeenth century it had become one of our national habits. It is curious to note how the phrase "make much of your horse," which he constantly uses, still survives in the cavalry drill-book, although we no longer class the direction under Markham's delightful head of "cherishings." Many of his terms are Italian, showing how the words of Grisoni had passed into current riding phraseology; especially conspicuous are the "corrections by voice,"—"Ha, villain, carridro, diablo!" These are the very words which, to the ears of the leading interlocutor in Victor Cherbuliez's fascinating *causerie*, "Sur un Cheval de Phidias," sound so harsh and unpleasing when he compares the renaissance of equitation in Italy with the last phase of riding in Athenian art. Even in Markham's day the art of the *manége* must have advanced very far indeed to allow him to discriminate the diverse forms of *manége* with rest, *manége* without rest, *manége* with single turns, and *manége* with double turns; nor need we pause unduly over his distinction between "*manége* open" and "*manége* close,"—the latter formed upon the Italian *incavalare* or *chambetta*. We shall best do our duty to the reader and give him a closer notion of Markham's services to the history and theory of equitation by quotations showing the quaint raciness of our author's style.

"When you have trotted your horse . . . you shall a little straiten your bridle hand, and then give him the even stroke of both spurs, which at first will only quicken him, but doing so again and again, it will breed other thoughts in him; and he being of spirit and mettall (it is lost labour to teach a jade such motions), he will presently gather up his body and either rise little or much from the ground. . . . When your horse can thus bound perfectly, then you shall make him corvet in this manner."

Markham proceeds to treat of the airs of the corvet and capriole, and accurately describes the uses of the wall and the post which were the outcome of the teaching of La Broue in the school at Versailles. Next follows the exercise of "right and left shouldering-in." This

movement was in its infancy at this period, to be especially developed by Guerinière in the early part of the next century. It is called at this time, "To make a horse go sidelong." The chapter finishes with a paragraph which is quite in the spirit of the age, connecting mediæval horsemanship and chivalry, as part of the courtier's necessary education, with the train of accomplishments of the gentlemen of our own age.

"If you shall be called to ride before a Prince, you must not observe the liberty of your own will, but the state of the person before whom you ride, and the grace of the horse which you ride: and therefore being come into the riding place, you shall choose your ground so that the person before whom you are to ride may stand in the midst thereof, so as he may well behold both the passage of the horse to him and from him. Then being seated in a comely order and every ornament about you handsome and decent, you shall put your horse gently forth into a comely trot, and being come against the person of estate, bow your body down to the crest of your horse, then raising yourself again passe halfe a score yards beyond him, and then making out a narrow ring, thrust your horse into a gentle gallop, and give him two or three managing turns in as short ground as may be, to shew his nimbleness and readinesse. Then upon the last turne, his face being towards the great person, stop him comely and close, and make him to advance twice or thrice: then having taken breath, put him into a gallop-galliard and so pass along the even furrow with that salt,[6] making him do it also round about the ring: then his face towards the Prince, stop him and give him fresh breath, then thrust him into the Capriole, now and then making him jerk out behind, yet so as it may be perceived it is your will and not the horse's malice: and having gone about the ring with that salt, its face brought to looke upon the Prince, stop him again and give him breath: then drawing nearer to the Prince you shall beat the turn *terra-terra* first in a pretty large compass, then by small degrees straightening it a little and a little draw it to the very centre, where you may give two or three close flying turnes, and then changing your hands undoe all that you did before till you come to the rings first largenesse; then the horse's face being direct upon the Prince, stop him and put him into a corvet, and in that motion hold him a pretty space, making him do it first in an even line, first to the right hand, then to the left, now backward, then forward again, and thus having performed every motion orderly and comely bow down your body to the Prince and so depart."

Solleysel and the Duke (then Marquis) of Newcastle were the next great writers after Pluvinel. The former's work chiefly deals with farriery, but Sir W. Hope, who published a translation (1696), considerably amplified Solleysel's remarks on riding. The title of the

[6] Sault: leap.

book is "The Compleat Horseman,' and to it and the Duke of Newcastle's we owe our knowledge of the number and nature of airs practiced at this period.

The French *écuyer* has some sensible and humane remarks, rather in advance of his age, upon the use of the spur and the temper. After reading him we almost wonder how the spur of that date could have retained the cruelly exaggerated form with which museums familiarize us.

"Now as the spurs are of such efficacy when used with discretion, so nothing makes horses more resty and vicious than when they are given out of time. And there are more horses made vicious by ill-riders and bunglers than are naturally so. The more unruly a horse is, the more calmest judgment is required in the rider. For from a passionate rider and unruly horse what can be expected but disorder and confusion?"

Like his contemporary, Solleysel, the first Duke of Newcastle also saw that everything could not be accomplished by force:

"I have seen very few passionate horsemen get the better of a horse by their anger. On the contrary, I have seen the horse always get the better of them: since the weakest understanding is always the most passionate, it is possible that the horse will always outdo the man. In this act there should always be a man and a beast, and not two beasts. . . . It is true that patience without knowledge will never do, as knowledge will seldom do without patience, and you must therefore treat him gently and not exert your full power."

Our great national horseman was the first writer who clearly expressed that insight into the nature of the horse, which lies in realizing that they are not all of the same mould and temper any more than men are; that they have their idiosyncrasies, tendencies, and even mannerisms like other artists. It is as unreasonable to expect uniform excellence in opposite spheres as to look for tragedy from a low comedian: "some may be more adapted for the *courbette*, whilst others will sooner learn the leaping airs *croupade*, *balotade*, *capriole*, and step-and-leap." The *croupade* was distinguished from the *balotade* and *capriole* by the horse when leaping into the air tucking his hind legs underneath him, and the *balotade* from the *capriole* by the kicking out behind of the hind legs, showing the hoofs. The French called this kick in the

[1] This agrees with the experience of most real horsemen. Whyte-Melville says, "I hold that implement of horsemanship to be in general most unmercifully abused, so much so that I believe it would be far better for the majority of horses, and riders too, if it had never come into vogue. The perfect equestrian may be trusted, indeed, with rowels sharp and long as those that jingle at the Mexican's heels on his boundless prairies, but, as in the days of chivalry, these ornaments should be won by prowess to be worn with honour; and I firmly believe that nine out of every ten men who come out hunting would be better and more safely carried, if they left their spurs at home." (Riding Recollections: "The Abuse of the Spur.")

capriole "nouer l'aiguillette." The Duke of Newcastle is unfortunately best known by what is least meritorious in his teaching. All critics severely handled the one exercise of which he was the inventor, and certainly, to our nineteenth-century eyes, nothing can be more absurd than to secure the horse's head on one side to the saddle by a fixed rein. But any one who reads the book will see that this is one of the few mistakes in a masterly treatise on the subject.

The external form of the work itself is well known to book-collectors. The plates are most beautifully drawn by Diepenbeke, and engraved or etched by Clousset, Paur, Lisebetten, Caukercken, Vorstermans, and others. It was translated by Solleysel from manuscript under the author's personal supervision at Antwerp in 1657; but the major part being consumed in a fire, it is supposed that only about thirty copies exist of the first edition. Owing to various cross translations,—English into French, and French into English,—the bibliography of the subject is obscure. The author in his preface commences, "There is an elegance in Horsemanship which looks as if it were natural, though it proceeds from art." He would seem to have met with some adverse academic criticism, for he continues:

"What makes scholasticks degrade horses so much, proceeds (I believe) from nothing else but the small knowledge they have of them, and from a persuasion that they themselves know everything. They fancy they talk pertinently about them, whereas they know no more than they learn by riding a hackney-horse from the University to London and back again. If they studied them as horsemen do, they would talk otherwise. For example, if a man has lost his way in a dark winter's night, let him leave the horse to himself, and the horse will find the way to the place whither he should go. . . . As for men of letters, though they study, they don't study horsemanship, but their studies turn to better account by procuring themselves to rule over the rest of mankind, till such time as they are subdued by the sword; wherefore it is not surprising if they be somewhat mistaken in what is not their profession and which they do not study; nay, what is more, have not the least knowledge of. . . .

"Some wagg perhaps will ask, what is a horse good for that can do nothing but dance and play tricks? If these gentlemen will retrench everything that serves them either for curiosity or pleasure and admit nothing but what is useful, they must make a hollow tree their house and cloath themselves with fig-leaves, feed upon acorns and drink nothing but water, for nature needs no greater support.

"I presume those great wits (the sneering gentlemen) will give kings, princes, and persons of quality leave to love pleasure-horses, as being an exercise that is very noble, and that which makes them appear most graceful when they shew themselves to their subjects, or at the head of an army, to animate it;—so that the pleasure is in

this case as useful as anything else, besides the glory and satisfaction that attends it."

The wife of the duke (Lamb's "thrice-renowned duchess"), in the life of her husband, mentions that the *manége* was his chief amusement in exile. He had always taken a great interest in horsemanship, and his father, when his son was a boy, "kept him to several masters in the arte of horsemanship, and sent him to the mews to Monseiur Antoine." When in 1644 he left England an exile, he traveled to Hamburg, and from 1645 to 1648 lived at Paris, where he bought the first horses for his *manége*, which he started the following year at Antwerp. How long he was writing his work we do not know, but he appears to have had much difficulty in getting together the necessary funds for its ultimate appearance in 1658. In a letter to his secretary, which was written from Antwerp, the 15th of February, 1656, we learn the cost:

"I am so tormented about my book on Horsemanship as you cannot believe, with 100 several trades, I think, and the printing will cost 1300*l.*, which I could never have done but for my good friends Sir H. Cartwright and Mr. Loving; and I hope they shall lose nothing by it."

From other sources we learn that there are numerous portraits in the book, the two most important and recurrent being those of himself and of his *écuyer*, "Le Capitaine Mazin."

That the duke was no mere theorist, but a thorough horseman, is illustrated by the following anecdote, if we may trust his own telling:

"The Marquis of Caracina was so civilly earnest, that he was pleased to say that it would be a great satisfaction to him to see me on horseback. I rid first a Spanishe horse . . . he went in corvets forward, backward and sideways on both hands, made the cross perfectly upon his voltoes, and did change upon his voltoes so just, without breaking time, that a musician could not keep better time and went *terra-a-terra* perfectly . . . The second horse I rid . . . went *terra-a-terra* . . . and for the piroyte in his length so just and swift that standers-by could hardly see the rider's face."

Indeed, he must have been renowned as a practical horseman for even Ben Jonson to have ventured such a complimentary epigram as this, bound though he was, by the duke's lavish hospitality enjoyed at Welbeck, to pay a compliment:

"When first, my Lord, I saw you back your horse,
Provoke his mettle and command his force
To all the uses of the field and race,
Methought I read the ancient art of Thrace,
And saw a Centaur past those tales of Greece,
So seemed your horse and you both of a piece!
You showed like Perseus upon Pegasus,
Or Castor mounted on his Cyllarus;

Or what we hear our home-born legends tell,
Of bold Sir Bevis and his Arundel;
Nay, so your seat his beauties did endorse,
As I began to wish myself a horse;
And surely, had I but your stable seen
Before, I think my wish asolved had been,
For never saw I yet the Muses dwell
Nor any of their household half so well.
So well! as when I saw the floor and room,
I looked for Hercules to be the groom;
And cried, Away with the Cæsarian bread!
At these immortal mangers Virgil fed."

Although the teachings of Solleysel and Newcastle were steady advances upon the old Italian and French masters, yet the number of airs were increasing to such a degree, and *manége* riding had now collected so many "aids," "corrections," and "cherishings," that the time had come for some master to arise and simplify the training and methods. Guerinière was the first to complain of this complication of airs and aids which disgusted both pupil and horse. François Robichon de la Guerinière's "École de Cavalerie" appears to us the most masterly treatise on his subject. Thoroughly imbued with the earlier literature, he yet borrows little from previous writers, but expounds to us the ideas of an original artist. So far from finding fault with past laborers in the same field, he quotes La Broue and Newcastle with approval at every opportunity, while retaining his right to differ from them. He seems a little displeased with Pluvinel, whose fine work elicits from him the faint praise of being chiefly valued for the engravings it contains. With Guerinière we are lifted out of the courtly period of the Great Monarch and suddenly plunged into a new era of horsemanship,—not of barbarism tempered with refinement, but of sensible and humane teaching.

"A horse is to be trained by sight, to come near objects which might frighten him: by sound, when we accustom him to the report of fire-arms: . . . by touch, the more necessary because it is by that sense we teach him to obey the least movement of the hand and legs."

Guerinière lays it down that henceforth the trot must be studied, as the pace which is to govern all the training of a horse. The cardinal supremacy of the trot had never before been brought out: hitherto the walk and the gallop had been the favorite cadences. This new departure taken, he propounds another movement, which he asserts to be the key-note of all scales: *épaule en dedans*—"shoulder-in," as it survives in our riding schools—and it is by his commentary on this motion, which he might almost claim as his own invention, that he lives to-day. He argues that the Duke of Newcastle was right in saying that circling makes the shoulders supple, but expresses his opinion that circling alone was not sufficient for the purpose. Passing

in review all the preliminary training, he also gives us an account of the airs then composed, dividing them into *airs bas* and *airs relevés.*

Guerinière's opinion on conforming to the natural bent of a horse coincides curiously with that of Newcastle, already cited:

"Il faut qu'un cheval ait une inclination naturel et qu'il se présente de lui-même à quelque air . . . afin de ne pas le point forcer à un air qui ne convient ni à son natural, ni à sa disposition. L'air de Capriole sur les voltes forme le plus beau et le plus difficile de tous les manéges, par la grande difficulté qu'il y a d'entretenir un cheval dans une cadence égale, sans qu'il se dérobe ni du devant ni du derrière, ce qui arrive le plus ordinairement."

Guerinière's first volume is closed by a long and amusing account of a carousel. What a picture Watteau, who was painting at the time, could have left us, had he chosen to portray *une fête équestre*, as a pendant to Guerinière's literary one! The work of the latter, indeed, bears traces of the Watteau influence in its illustrations delicately engraved on copper by Audran, Parrocel, and Dheulland.

The carousel was a military *fête*, or a mimic combat, represented by a troop of cavaliers grouped into several square sets—quadrilles, as they were called—to compete for prizes. The spectacle was completed by chariots, mechanical effects, devices, recitations, and equestrian ballets, the variety of which united to form a magnificent whole to the eye. The *dramatis personæ* consisted of a master of the ceremonies mounted, with his aides-de-camp; the cavaliers, comprising each figure or quadrille, who with their cartels, dress, mottoes, arms, pages, slaves, footmen, grooms, horses, and caparisons, made up a brilliant scene. To these must be added the reciters of the poems, the mechanicians and the musicians. Each set or "quadrille" was composed of from four to twelve riders, not including the leader, who was usually a prince. The quadrilles were of two kinds,—those of the holders or defenders, and those of the assailants or disputers. The holders opened the carousel by challenges proclaimed by the heralds. They are called holders because they maintain declarations or challenges which they undertake to uphold by force of arms against all comers, and form the first quadrille. The assailants resist the challenges and cartels of the holders, and compose the opposite quadrille. The cartel is delivered in the name of the leader of the quadrille, whose adherents wear his liveries, and contains five points: the names and addresses of those who bear the challenge; the cause of the challenge to fight, and any other proposition which they desire to defend by force of arms; the place and mode of combat; the names of the holders who send the challenge or cartel.

The cartels might be either in prose or verse; and as the occasion for the challenge is the desire for self-glory and advertisement, they are seasoned with some amount of rodomontade. The subjects of

carousels being historical, fabulous, and emblematical, the holders and disputants assume suitable names, those who represent Roman subjects, for instance, styling themselves Julius Cæsar. The names corresponded to the devices or posies of the riders, and the quadrille itself bore their name. The grooms and footmen led in the horses by hand, and remained near the machines, disguised as Turks, Indians, slaves, or savages. The musicians, vocal and instrumental, performed two kinds of music,—one stately and martial, the other soft and dulcet. The first is at the head of each quadrille to amuse the riders and announce their presence, their entry upon the course, which was called "compase," and their challenges; the other kind was an accompaniment to the recitals, the mechanical effects, and the pageant. For the production of the martial harmony drums, trumpets, cymbals, oboes, and fifes were used.

Such, in its many points of resemblance to our Elizabethan masque, is Guerinière's detailed account of the carousel,—a word which is probably known to most of our readers only in its degenerate English form of carousal, or else from its survival in Paris, in the name of La Place du Carrousel, which may in its day have been witness to "the pomp, pride, and circumstance" of such a glorious pageant of peace as that of which we have given a faint impression.[8] Guerinière finishes with a description, less definite than that of Pluvinel, of a *balet de chevaux*, and we may fitly turn from his book with his closing words:

"All these exercises were instituted to give an artistic picture of war and to kindle a spirit of emulation amongst the nobility."

We might well expect that the school for which Guerinière had done so much would give to the world pupils who would have carried the art a step further. But we may almost say that its decline began at its death; for there sprang up a rivalry and a desire to complicate still further the airs which were then in practice. No real progress took place after Guerinière until the time of the Marquis de la Bigne and M. d'Abzac, who attempted to combine with their own ideas of riding whatever they recognized as good in the English school.

To complete our historical retrospect of the French school, we mention M. Dupaty de Clam, a translator of Xenophon, and a great advocate for the study of anatomy and mechanics in relation to horsemanship; Nestier, D'Auvergne, Mottin de la Balme, Drummont de Melfort, and Montfaucon de Rogles, whose "Traité d'Équitation" was the basis of the "Manel pour l'Instruction équestre," in use when the School of Cavalry was inaugurated at Saumur in 1814.

We gather that there was at last a real cleavage of the art of riding into two branches: the academic form or the Haute École, and military riding pure and simple,—France and Italy alone keeping the

[8] The military carousel is not yet extinct in France. Only last year (1895) we read of one being held at Saumur.

former alive, and England being the home of the latter, as well as of hunting and racing. The Earl of Pembroke, in 1761, inadvertently teaches us this. His little tract on breaking horses and teaching soldiers to ride never mentions the word "air"; he only discusses the education of the trooper. But he shows that he had studied in the school of Guerinière by his references to the "épaul en dedans," and by his disapproval of the pillar.

"Very few regimental riding houses indeed have pillars, and I must say that it is fortunate they have not. For tho', when properly made use of with skill, they are one of the greatest and best discoveries in Cavalry, they must be allowed to be very dangerous and pernicious when they are not under the direction of a very knowing person. Upon the whole, I must declare, that however highly I approve of pillars, I would on no account admit of any, unless constantly under the eye and attention of a very intelligent teacher; which is a thing so difficult to be found in regiments, that I think pillars are better banished from amongst them, and therefore shall say no more of what I esteem nevertheless so much. As for the single pillar, it is a very pernicious and ridiculous thing; and being as I hope and believe universally laid aside, I think, it is not worth making further mention of here."

The revolution in France influenced art in somewhat the same way as the Puritan movement had done in England. The spirit which replaced the elegance of Watteau and Boucher by the cold severity of David was naturally prone to sympathize with hard riding as the only acceptable form of horsemanship. Accordingly we find that under the Directory all riding-schools were closed, and the teaching of the art was at a stand-still,—one *manége* becoming the scene of the meetings of the Revolutionary Committee. The story goes that our famous Philip Astley only recovered possession of his own *manége* in Paris through a personal interview with the First Consul. A few years later many efforts were made to re-establish the old *manéges*, but the true object in each case was training officers and men for the cavalry; no real system of horsemanship studies, treated purely artistically as under Louis XIV., was ever again set on foot. After the fall of Napoleon there was an attempt to reorganize the old school of Versailles, but the young men of fortune had new tastes, and the long and tedious work of the *manége*, contrasted with the pursuits of racing and hunting, had no charms. The followers of the old school were still wrangling among themselves, fighting over the teaching of Pluvinel and Guerinière, and not until Baucher, about 1830, do we come upon a new horseman of original ideas in France. At the commencement of his career, he performed a kind of Haute École at the circus, and attracted thousands to see him nightly; his idea being to destroy the natural movements of a horse and to substitute artificial ones. His performance consisted of

the most extravagant airs, and there was far more of the circus-rider than of the artist in his rendering of the old Haute École. He soon found an enemy in the Comte d'Aure, the champion of Guerinière's school, and hence arose at this time in France a keen competition between the rival schools of horsemanship. Such a friction of ideas could only have a stimulating effect upon the art, and although, from this time forward, Baucher caused the Haute École to be more than ever associated with the circus, yet he created a great diversion of opinion and diffusion of ideas. He published, in 1842, his "Méthode d'Équitation basée sur de nouveaux Principes," after the government had adopted his method experimentally. He saw the value of the *manége*, and recognized that its art for mere pleasure and dilettantism was gone. He utterly discards the use of force which the *manége* school had still retained as possible in training a horse, and declares that every horse can be made to do anything. What Baucher introduced of the Haute École into the training which he advocated was very much what the goose-step achieves in the drilling of a recruit. He wishes the horse to learn to hold out his leg for a moment in the position in which that leg will be put down when he trots, gallops, walks. Thence he passes to those movements wherein the horse continues to walk, but at each step holds his legs for a moment in the air, in the manner of a slow march. The most complicated movements in his system were the raising of the legs as in a trot without advancing, called the *piaffe*, and the changing of feet as often as desired. Altogether he advocates sixteen different movements. It is only fair to Baucher to add that in his own opinion he derived no part of his method from previous exponents of the Haute École. In his modest estimate of his own merits he had no forerunner and could not possibly anticipate a successor.

We have reserved to the last the names of two Englishmen—one a "household word" to this generation of circus-goers—who did their best to spread a knowledge of the art in England, while most of our best writers on the horse were devoting themselves to the history and description of hunting.

Philip Astley was one of the last exponents of this form of riding in England. He published in 1802 a "System of Equestrian Education," as a final effort to save the Haute École from becoming extinct. In this work he begins grandiloquently: "If the natural motion, attitude, and demeanour of the human species be improvable by the art of dancing and military tuition, surely the natural motion of a horse may be so improved as to render his pace in cadence easy to himself." He alludes to the painful exhibition of riding in the Park at that time, and to Bunbury's humorous sketch of the "Enfield Chase Air." But when he is anecdotal, he becomes more interesting, referring in one place to our ambassador, Lord Clarendon, who, in 1782, on his way to Belgrade, visited all the *manéges*, and among them that of Vienna,

where he rode before the king. He details the ride on this occasion: "Uncovering before the king, I walked up and down, circled to the right and left, . . . passaged and went through the airs of *terre-à-terre*, *pirouette*, and *piaffe*." Towards the close of the first volume Astley gives an account of the minuet which he performed with his son. This commenced with the *piaffe* when the two saluted each other, after which they proceeded by means of the *terre-à-terre*, which airs brought them to the opposite corners of the *manége*. Then they approached by *demi-voltes*, and, "piaffing," they shook hands, and then returned by *terre-à-terre* to the corners. One rider then pirouetted while the other performed a different air, this bringing them *vis-à-vis*. A pause in cadence followed, a lofty *piaffe;* then they again uncovered and passaged to right and left, and after a few other airs each retreated backward out of the arena.

When Astley was founding the circus with which his name was till lately connected, the greatest contemporary fencer, dancer, and rider of the great horse of his time, Henry Angelo, was already old. His *manége*, situated in Wardour Street, was the academy of these three arts, and to it George III. had sent his sons to learn these accomplishments. His horse, Monarch, beautifully "manéged" by him, may be distinguished in West's picture of "The Battle of the Boyne."

The other Englishman, John Adams, seems to have been a self-made man. Beginning as a riding-master, he grew in fame until he attracted all the young dandies of the day. In a characteristic passage in his "Analysis of Horsemanship," he draws the analogy between horsemanship and penmanship:

"In penmanship, the large text and round hands may be compared to the *manége* feat,—in which exact proportion and correctness in every particular is studied, learned, and executed; the German text, Italian, cutting letters and striking flourishes, I compare to the several lessons and ornamental airs of the *manége;* and the engrossing running hands, being the hands of dispatch and business, I compare to the hunting, traveling, and racing feats."

The Haute École had no ephemeral existence; it affected military riding permanently. To-day the ordinary training of a horse for civilian use is adapted solely to the purposes for which the horse is destined. Anything further than is required by utilitarianism would be looked upon as waste of time. But in military manœuvres, where precision is required and where drilling is the object in view, a more detailed training has always been considered indispensable, and it is therefore in our military schools of riding that we find a faint survival of the old art of the *manége*. Putting aside this living relic, we have now, and have always had since the end of the last century, the exhibition of the art in the circus. Nothing, perhaps, has contributed to the practical extinction of the Haute École more powerfully than this asso-

ciation with sawdust and spangles. A noble form of horsemanship, already in its decadence, received its final *coup de grâce* when it became the professional pursuit of acrobats.

There are many suggestions in the Haute École of the sister art of dancing; indeed much of its nomenclature has been borrowed from that art. The grace and rhythm of the movement in the one were the objects aimed at in the other, and so obvious is the analogy that it is not surprising to find the same steps and combinations of steps (called "airs") in both arts. A number of airs in riding formed as it were a dance, and even received its names. Upon the airs performed in measured combination which constituted the pageant of the "Balet de Chevaux" in the days of Louis XIII. and Louis XIV. we have already dwelt in detail. Then as we approach the time when the circus supplanted the *manége* proper, the exhibition of the Haute École took its pattern from the stately "minuet," then the prevailing form of dance. The quadrille has been already alluded to.

As hunting, the most popular and healthful of physical excitements, rose to its zenith, the milder flame of the intellectual pursuit of the *manége* pales and flickers towards extinction in the circus. Whatever else it was, the Haute École was not a branch of sport. It is unlikely, so long as fox-hunting can be followed in this country, that there will be a revival of the horsemanship of the *manége*. Yet at the present time, when a spirit of historical interest is making men ask one another what there was in such a subject as academic horsemanship to kindle the enthusiasm of our ancestors, and produce the literature and traditions that cluster around it, an hour may not have been wholly wasted in a study of the "Haute École."

GOLD.

A DRAMA.

CHARACTERS.

WILL ROBINS, known as "BANJO WILL."
GUY LAPORTE, a gambler.
HUGH HEMLOCK, a miner.
BEN BLOAT, DAN DUFFER } "Pardners."
GENTLEMAN WARCROSS, otherwise "GOUGE-EYE WARHORSE."
NELLY, Laporte's wife.
THE BABY.

PLUTO MINE, CALIFORNIA, 1849.

(*Orchestra plays negro airs. Curtain rises.*)

SCENE. Pluto Mine. *A canvas tent or hut, partly of boards. Rough stools or benches, cradle, camp-cot, wooden table, kitchen utensils, fire, tea-things, rude lamp, skins on floor, picks, pans, etc. Entrance side and back. Time, eight* P.M. *Equinoctial storm.*

(BANJO WILL, NELLY, *and* BABY. NELLY, *rocking the infant.*)

NELLY. Another song for baby, Will! See, the little dear is laughing to itself and holding out its tiny hands for more. I, too, delight in those old negro melodies, for they speak to my heart of my girlhood's home down upon our old plantation, away in dear Virginia, where my parents lived, and I, a child, was raised but to drift out here upon life's ocean among the stormy winds and waves; and yet it is not all a storm, for I am only too happy now with Guy and little dimple-cheek,—my darling! (*Kissing and fondling* BABY.) I do like to listen to music so much more than to this eternal babble about sand and nuggets. It really makes one blue to hear so much about this yellow dust.

WILL. Certainly, Nell, I'll sing to you with pleasure the songs you love to hear, and play you a Virginia breakdown also, if you like. What will you have? "Lucy Long," "Dandy Jim," or—but let me choose for you this time, and I'll give you—"Nelly was a Lady," a song my mother taught me in the long ago. (*Sings "Nelly was a Lady," banjo accompaniment;* NELLY *joins in chorus.*)

NELLY. Thank you, Willie! We'll have to christen you "Banjo Will," I think, you are such a famous rattler on the strings. Now, a breakdown for the baby, please. (WILL *plays breakdown*, NELLY *dandles* BABY.)

NELLY (*to* BABY). Was its mamma a lady, then?

WILL. I'm a different fellow since I've known you, Nell. You've been a sister to me, and Guy a brother. After I ran away from home to see the world, I became a wayward chap among the wild scenes of the savage West. Heaven and my mother's holy lessons were well-nigh forgotten in the mad, earnest quest for gold among a horde of reckless miners flushed with the hope of acquiring sudden wealth and the open chance they thought they saw ahead to mend badly-broken lives and discredited characters far away from old haunts of disgrace and shame, and in many cases crime, amid the freshly-trodden fields of a new world.

NELLY. Poor men! Hard fate had given them many a trial and trouble in the past, and might even be decoying them on towards mocking illusions and moral pitfalls deeper and blacker than they had yet encountered, for aught they knew, or most of their fellow-adventurers cared a whit.

WILL (*taking her hand and pressing it with reverence*). Yes, you and Guy, dear friend, saved me from falling into bad ways and forming evil associations which might have blighted my life forever. Oh, how I thank you, sister, for letting me share the blessings of your home,—for giving poor Will the privilege of your good influence and refined companionship! God grant you health and happiness and the chance to have my mother's thanks in the years to come, perhaps, for your constant kindness to her wandering son. You're a holy angel, Nelly!

NELLY. Only Guy and you think me so. (*Door at back swings slowly open.*)

WILL. What a gale it is!

NELLY. I wish Guy were home. (WILL *strums his banjo;* NELLY *starts.*)

WILL (*stopping*). Who's there?

NELLY (*with joy*). Husband!

(*Enter* BLOAT *and* DUFFER, *half-drunk, at back.*)

BLOAT. Yer gittin' raythor sweet on that yar gal, I'm thinkin', ain't yer? Come now, don't blush, my lady, but tell the solemn gospel truth. We're listenin'.

NELLY. What's that to you or either of you? You've no right here. If Guy were here he'd put you out in a minute. Leave us at once! You're by no means welcome. Go away!

BLOAT (*saucily*). See here, young woman, no sarce! If yer go outside yer home yer've got to take up with more fellers than one, that's all. Which'll it be, me or Duffer? Yer've got the right, I own, to pick and choose, my pet. Duffer's a dandy, and I'm not a scare-crow if I know myself. We ain't a-goin' to have no monopolies in these yar diggins. No, sirree, horsefly!

NELLY. Off with you,—both of you! I tell you to go away. How dare you intrude into Guy Laporte's cabin and openly offer insult to his wife? Wretches!

DUFFER. Wife! Ha! ha! Sa-ay, Ben, my boy, that's a good un, a wery good un, ain't it?

BLOAT. I ain't a-goin' to be led a jack-o'-lantern dance by yer, nohow. Yer've got the chice, Nelly, betwixt Dan and me. We both love yer, my gal, both madly. Take either of us yer want, and oust that yar nigger-minstrel yander. So, pick and be durned!

WILL (*coming forward*). Let Mrs. Laporte alone, pray, and leave her to herself. She's only listening to my banjo and minding her own business. Come, boys, be civil to a young lady, and I'll give you a good old song that will remind you of your homes in the far-off East, and scenes which may be fond and familiar to your thoughts, and bring to your minds, perhaps, the dear ones you have left or lost in the long, long ago. Be men! (*Begins "Long, Long Ago."*)

DUFFER. Damn your music, say I, for one!

NELLY. What is your business here? What do you want?

BLOAT. Nelly, my dear, yer must be rank tired of that young skunk by this time, and sigh for an agreeable change like me. Nell, I'm worth a heap of dust, the precious earnings of an honest life. See, gal, that's gold,—yaller, shiny, glitterin' gold, every grain of it. (*Shows gold-dust.*) I've a pocket yar a long sight better than any blasted pocket in the rocks. I'm a-dyin' for yer, gal. It's all yers; yers to keep. I'm yers. Be a good gal and listen to the voice of reason. I want yer to go along with me. Leave that yar brat for him to rear as faythered it, and come along with me as can keep yer like a lady, a fine lady, and make yer rich as Crisis. Up with yer, I say!

NELLY. I tell you to go from here and leave me. Don't be a coward and bully, trying to scare a poor, weak mother with her birdie nestling in her arms. My husband's away or you'd never dare do this.

BLOAT. Maybe I would and maybe I wouldn't; that's as it is. I've sworn to have yer, gal, so go away with me yer must. Now, no more gab, but git! Come! (*Advancing towards* NELLY, *who hugs her baby to her breast and steps back, frightened.*)

NELLY. Help, Will, help! The brute is drunk or crazy. Help, for the good Lord's sake!

WILL (*flinging himself between* NELLY *and* BLOAT). I defy you to molest her. Bully as you are, I do not fear you. Let Mrs. Laporte alone, or touch her at your peril. Leave this place!

(BLOAT *and* DUFFER *advance upon* WILL *and assault him furiously with their fists. He falls to the floor and groans.*)

BLOAT. Curse you, take that!

DUFFER. And that, yer bet!

NELLY (*kneeling beside* WILL *and clasping her hands*). For God's sake, spare him! You have killed him! Heaven help him!

BLOAT (*brutally*). Let him stay where he is and come with me. Here, Duff, take the kid. (*Snatches the child while* DUFFER *seizes and lifts up* NELLY.)

NELLY. Help! Murder! Help!

(*They struggle. Suddenly enters* HUGH HEMLOCK *at back, big and honest-looking, having an ax and an armful of wood for fire. Looks around.*)

HEMLOCK. Gosh! You two ruffians at work again? Leave go of that lady! Drop that babby! Lay him down tenderly,—not that way,—head up! What's been the matter, marm? How?

NELLY. Oh, Hugh, they've beaten poor Will to death, I fear! He scarcely breathes. Let us raise him up! There is whisky there in that chest. Alas! He has lost his life for me,—Guy's best and dearest friend and mine. Poor, gentle Will!

HEMLOCK. I swow, I'll crack a nut with these two critters first! Are you armed? If so, I'll keep my ax. If not, I'm willing to engage you with my fists. I'll take the chances, anyhow. Come on, both of you, if you are men! (HEMLOCK *rushes at them, but they manage to evade him and make their escape from the cabin.* HEMLOCK *essays to follow, when* NELLY *calls out.*)

NELLY. Look to Will, Hugh: I believe the boy is hurt to death. May Heaven save his life! (NELLY *places* WILL'S *head in her lap and chafes his temples while* HEMLOCK *draws a bottle from the chest and pours a draught down* WILL'S *throat.* WILL *gurgles, sobs, and slowly opens his eyes. He sighs and gasps for breath.*)

WILL. It's all over with me. I'm glad to die for your sake, Nell, more than my sister, and Guy's wife. We only met here at the mine, but have always been fast friends and true,—we three. I cannot last long now. Don't weep, sister; and kiss Guy for me. You'll not forget poor Will, will you? Give me my banjo, dear; the solace and companion of my home beyond the dreary plains. Oh, how my mother loved to sit beside me in the summer evenings and hear me play upon it! Let me sweep its strings once more before I go!

HEMLOCK. Here, Will, old fellow, drop that lay and cheer up a bit, my boy. You're not going to die, I guess. We won't hear of it in these diggings. Brace up!

(WILL *smiles sadly, but shakes his head, and sounds a few chords of "Nelly was a Lady," then the banjo slips from his hands, his head falls back into* NELLY'S *lap, and his gaze becomes bent a long way off.* NELLY *weeps.* HEMLOCK *takes* WILL'S *hand and looks intently at him. Orchestra plays "Nelly was a Lady," in low, soft strains.* WILL *speaks tenderly.*)

WILL. Sister, I hear the birds singing so sweetly in the trees. No, it doesn't sound like birds,—they are singing words,—something about a throne; and there are flowers and green fields,—and I see a great light breaking,—how beautiful it is! Sister, good-by, good—— (*He drops back.*)

HEMLOCK (*taking off his slouch hat and kneeling mute and in* awe *beside him*). His voice was ripening for an angel choir, who knows!

NELLY. The birds that sang strange music to his ears are wafting him somewhere on their wings. (*Looks up to heaven, sobbing.*)

(*Steps heard without.* LAPORTE *enters in riding-boots, whip in hand, and smoking a cigar. He is cool and collected. Also enters* WARCROSS, *a shabby-genteel, broken-down dandy of middle age, with umbrella, eye-glass, white frill on red flannel shirt, and limp collar. Coarse but affected. Wears battered silk hat, moustache, and very long imperial. Swaggers and struts. Has a flash hard look. Uses a mixture of learned and vulgar language. A character.*)

LAPORTE (*glancing sharply around*). How's this,—a fit or a fracas? Why, what's up with young Will, Nell?

WARCROSS (*airily*). It's *all* up, I should opine, judging from the unusual rigidity of his anatomy. Done gone, or I'm a snoozer! Friend of yours? Outrajus!

NELLY (*throwing herself upon her husband's breast*). Guy! Guy! there's been the foulest act committed here! Bloat and Duffer, those two wretches, have beaten and killed poor Will,—murdered the lad for standing between me, your wife, and harm. The dear, good soul has but this moment breathed his last. Bless him! Bless him!

HEMLOCK (*solemnly*). Amen! A brave young heart has only ceased to beat! There's more gold here than that found in the mines.

LAPORTE (*tossing away his sombrero and riding-whip*). The deuce! Give me the details of this affair, Nelly. Will Robins, our old comrade, dead! And foully dealt with! Bloat and Duffer, the wharf-rats! When was this thing done? How long have they been gone?

NELLY. But this instant they were here. You must almost have met them at the door. Hugh drove them off. If they did not see you arrive they may yet bring weapons and return to wreak their vengeance upon Hugh Hemlock. They are deadly outlaws.

WARCROSS. Yes, a brace of bully-raggers. They'll soon be back, or I'm a snoozer!

LAPORTE. Hemlock, help me to bear Will's body to the tool-house,

where it may gently rest until to-morrow's burial. Wait! Here is his banjo. Place it upon the bosom which used to throb so joyously at its strains. He had the courage of a man with all the gentle tenderness of a woman. His soul was virgin gold!

(HEMLOCK *and* LAPORTE *carry* WILL *out, as* WARCROSS *uncovers, and* NELLY *kneels beside her babe and weeps.*)

NELLY. His soul was pure, indeed.

WARCROSS (*aside*). Clean as my own ere I left Shadefield and all the holy scenes and memories of my over-innocent youth. Oh, what a saint was I! That was the happy time of my rustic, rural life and pious bringing up, before I went to college, studied law, came out West, put up my shingle, fell in love, flopped on my knees, got the mitten, went to pot over that fair girl, shot my rival, lost my social standing, got no more professional practice, became an habitual boozer,—in short, was bluffed. Who'd take me for a Yale man now? Yes, since Gentleman Warcross became popularly known as Gouge-Eye Warhorse, he suddenly withdrew for the good of his health from the township of Killikinnick, in the State of Illinoyse, sloped for Texas, fit in Mexico, joined the Mormons, was kicked out of Joe Smith's Latter-day-Saint mill, drifted across continent, reached the Sierra Nevadas without a cent in his pocket, and—sixth, and lastly—became an ornamental denizen of the gordjus State of California, thanks to Fremont, Stockton, Kit Carson, Yankee Sullivan, and all the rest of those mighty and immortal high-kickers. Does the United States boast of a more distinguished and universal citizen and appreciative partaker of his aboriginal birthright and smoking mess of pottage than the aforesaid Gentleman Warcross, *alias* Gouge-Eye Warhorse, Esquire, late of the thriving town of Killikinnick, in the State of Illinoyse? Eh! A bottle! I droop. (*Emptying bottle, smacks his lips, and rubs his stomach soothingly.*) Gouge-Eye's himself again!

(*Re-enter* LAPORTE *and* HEMLOCK, *sadly and silently. Gale outside howling.*)

HEMLOCK. The wind is rising; the storm increases.

LAPORTE (*thoughtfully*). The wind *is* rising; the storm *is* increasing. You are right.

HEMLOCK. It will be a black night.

LAPORTE (*seriously*). It *will* be a black night.

(*They sit;* WARCROSS *absurdly boozy.* NELLY *still by the cradle.*)

NELLY. We'll name our dear one Will, for the sake of him that's gone, will we not, my husband?

LAPORTE (*with feeling*). God bless him, so we shall!

(*The door of the hut suddenly bursts open as if by the force of the storm, and is violently slammed shut again.* LAPORTE *observes it and exchanges significant glances with* HUGH HEMLOCK. LAPORTE, *with perfect sang-froid, lights a cigar and passes a handful of them over to the others. They smoke.*)

WARCROSS (*to* BABY). When the wind blows the cradle will rock!

LAPORTE (*lightly*). Nell, my darling, after the harrowing incidents of to-night you had better retire. And, dearest, before you withdraw, will you not get my dress-suit out of the trunk in your room, beside the bed. I have a curious fancy to shave and dress myself before I sleep, just to feel like a gentleman once again before I—before I go to bed. A mere freak, you know. You see, even a reformed gambler may like to imagine himself a gentleman once in a while, in order to sport his best attire and mince and bow and scrape like a French dancing-master, or a monkey. A mere whim, however, though not, perhaps, entirely unworthy of respect. And, Nell, love, my silver-mounted Colt's revolver with the inlaid mother-of-pearl handle,—the one with which I fought New Orleans Ferguson,—just to feel its touch again in the breast-pocket of my coat. Every fool has his occasional foibles, you know. That's one of mine.

NELLY (*anxiously*). You're not going out again, Guy?

LAPORTE. No.

NELLY. Then I will get the things for you, and help you to dress, too, if you wish, before I try to sleep.

LAPORTE. Gentlemen, excuse me for a few minutes. Make yourselves at home. Hugh may talk of his old New Hampshire days, and Warcross of his various personal experiences when a young man in Horace Greeley's primitive, pastoral West, where I was a gentle shepherd once myself, and fleeced the lambs—the bleating, bounding lambs—that skipped about St. Louis, some years ago, ere Nelly, pretty Nelly May, took kind compassion on me, married me, and converted me from an accomplished gambler into a rather indifferent gold-digger. I do not regret my change of trade, however, for Nelly and my gentle offspring's sake.

WARCROSS (*lugubriously*). But I do mine, my buck, from that of a too successful desperado into a miserably unlucky bankrupt of a dead-beat. The Warhorse, my friends, is no longer the daring, dashing, devil-may-care hero, afraid of neither man nor beast, that he was in those palmy fighting days of auld lang syne. Here's peace to their ashes,—but the bottle's empty! Ojus!

LAPORTE. You've had enough, sir, or I'd bring you out another. Pardon me if I'm rude. Here's a box of cigars, though. Anon!

WARCROSS. Gouge-Eye a bummer? Frightful!

NELLY. Good-night to you both, and thank you a thousand times, Hugh Hemlock, for your manly championship of little Will.

(GUY *and* NELLY *withdraw to the adjoining room,* NELLY *carrying* BABY, *who is asleep, and* GUY *kissing his wife and child affectionately as they make their exit, his arm about* NELLY'S *waist.*)

HEMLOCK (*soliloquizing*). They loved Will Robins with all the force of their true, kind natures; and how they mourn for him now that he is gone, poor fellow! (*Sighs.*)

WARCROSS (*drawing from his skirt-pocket a greasy pack of cards*). Shall we regale the mournful time with poker? Small stakes!

HEMLOCK. I'm in no mood for play so soon after a foul murder.

WARCROSS (*sententiously*). A tragic circumstance, assuredly, this sudden taking off of the tuneful Robins. (*With drunken humor.*) Who killed Cock Robin? I, said the sparrow, with my bow and arrow, I killed Cock Robin. Sad, sad, sad, very sad. And the worst of it is that this is not the end of it either. We read resolve in Monsieur Laporte's eye. Who saw him die? I, said the fly, with my little eye, I saw him die. Guy Laporte is thirsting for revenge. There's going to be a row, my friend, or I'm a snoozer.

HEMLOCK. I guess you're about right, major. Laporte means business, and those two bad critters, Bloat and Duffer, are not slow in coming to a fight. We'll have to see Guy through in this affair, for the sake of his loving wife and tender babby. They'll be back again to-night, those outlaws, or I'm a blamed Kanuck. Warcross, are you armed? I have my ax. (*Grasping ax.*)

WARCROSS. Woodman, spare that tree! Should the brace of bloody blackguards return, they shall not find the Gouge-Eye unprepared. I always carry with me this little tooth-pick, made in Arkansaw, and named for Bowie, a sticker, sah, and a slicer, sah, by Gad, sah! (*Draws from the back of his collar an old-fashioned Bowie-knife or "Arkansas tooth-pick," makes passes with it, and replaces it with a grim smile.*)

HEMLOCK. A terrible weapon, if you know how to handle it.

WARCROSS (*dramatically*). If I know how to use it! Sir! Do you doubt my deadly character,—me an old practitioner at the Western bar, or I should say, more properly, bars, for there are two of them. (*Wiping his mouth dryly.*) Would you believe it, Hemlock, I was once a confirmed peace man, but I lost money by it, and rose at a spring to the noble level of the situation. It was in the town of Killikinnick, State of Illinoyse, and happened this way. I caught a client with a fence case. She was a widow plaintiff, and a plaintive widow, defendant being a blacksmith who fell through her garden fence one day in a drunken fit. She wanted him made pay for a newer and better fence, of a more modern pattern. I brought the suit, and

won, as a matter of course. On hearing the judgment, the blacksmith sung out in open court, "I reckon there's no use either asking yer to fight or drink, chalk-gills." "Indeed, and there is," said I. "I fight first and drink afterwards, or *vice versa*." The judge, a Kentucky man, upon learning that there was going to be a row, straightway adjourned the court for thirty minutes to see it out. It didn't take near that long. We fought with pistols. Just as I fired, blacky kinder heeled over and sat down all of a heap on his head. There was a black-berrying next day in Killikinnick, Illinoyse. And the judge lost ten dollars that he bet ag'in' *me*. Observe the moral!

HEMLOCK. I suppose that performance wound up your career in Illinois, and sent you farther West.

WARCROSS. Not a bit of it, my buck! Business came in on me with a rush, and I soon bought myself a house. Sal Ruggles, an old flame of mine, who had refused me once before, sent around word by Deacon Giles that she wondered how it was that Lawyer Warcross had become so cool and unsociable of late. "She can't come it, deacon," answered I. "My habits have grown disgraceful since I'm rich: I chew, smoke, drink, swear, gamble, and wanton like a young billy-goat. It's no go now. She hasn't the shadow of a chance with the successful counselor who has recently been christened Warhorse by his admiring fellow-citizens of the town of Killikinnick. Why, deacon," I wound up, "they talk of sending me to Congress soon from the glorious State of Illinoyse. Then I can repent of my sins in sack-coat and sashes."

HEMLOCK (*ironically*). I'm thinking, major, you're not too old yet to change and mend your ways. Even a confirmed fire-eater like you may still reform.

WARCROSS (*majestically*). Still reform! No, sir, not while there's a single still left standing in the United States. I'm proof. Thirty per cent. above proof. Sour mash, copper distilled. (*A pause.*) How did *you* get here?

HEMLOCK. I came around the Horn.

WARCROSS. A Horner—a Cape Horner. Little Jack Horner sat in a corner.

(*The above dialogue slow and deliberate, with plenty of by-play and stage-business, in order to afford* LAPORTE *time to change his dress. Door opens at side of cabin;* NELLY'S *voice heard.*)

NELLY. Dear Guy.

LAPORTE (*without, speaking with fervor*). Good-night, my darling. May Heaven guard you and my child forever! (*He stands just within the door-way, but is visible from where* HEMLOCK *sits. Aside.*) If I am killed, I shall at least die dressed like a gentleman.

HEMLOCK (*looking up*). I swan! Here's Guy Laporte rigged out

in his best Sunday-go-to-meetings, but with a very devil of determination on his handsome face. What a desperate air for a man to wear in a ball-dress! Is it to be a dance of death, I wonder?

(*Enter* LAPORTE, *attired in fashionable evening dress, old-style cut, but very elegant and becoming; diamond pin in shirt; firm and manly bearing, too calm manner, though wicked and flashing eyes. His stubbly beard is now clean shaven. Is seen putting revolver in breast-pocket. Takes cigar from box, lights it with match, sits down easily, lolling in chair, and looks quite bored.*)

LAPORTE (*with excessive coolness*). Time hangs heavy, gentlemen. What can be the matter?

HEMLOCK. I guess they're priming up at Sam Sloan's gin-mill. That stripe of critter seldom works without getting up Dutch courage.

WARCROSS (*aside*). At the present moment I'd like a little Dutch courage myself. (*Aloud.*) When a bloat from Philadelphia and a duffer from New York want to fight, they have to get up steam. But who's afraid of a Brotherly City bully and an Empire City rowdy? That duffer, Bloat, is a bruiser, and that bloat, Duffer, is a regular New York b'hoy, with his soap-lock slang. "Sa-ay, Sikesy, take der butt." "Git off der hose, or I'll hit yer over der head wid der nozzle." Don't go outside of Gotham to find the fast street-fighter. Let the brutes beware, however, of old Gouge-Eye Warhorse!

HEMLOCK. To my mind, major, with all your boast and braggadocio, you are at heart more Gentleman Warcross than the rough-and-tumble desperado you affect to be.

WARCROSS. Gouge-Eye a blower? Horrible!

LAPORTE. I have seen in swell saloons the most blustering sports the worst cowards, and some modest, quiet man with the pluck of a game-cock and the ferocity of a bull-dog when aroused. Mankind are deceptive in these matters sometimes, but you can soon tell the dross from the gold, pluck from bravado. What are those dastards waiting for?

HEMLOCK. These critters, when they have given such offense as this, know that they must fight it out or quit the diggings. They'd rather face the music than run, that stripe. They've gone for weapons,—their six-shooters.

LAPORTE. Ain't they coming back to-night? If they don't, I'll go to Sam Sloan's drinking-place to meet them.

WARCROSS. They'll be here again or I'm a snoozer. They're priming up, as I would like to do myself, I, an original '49er.

(*Sings "Clementine" with amusing antics.*)

(*A dismal pause.*)

(*The gale heard howling without. The door is flung open, and in lounge* BLOAT *and* DUFFER, *very insolent and ferocious. Both scowl and keep their hold upon their pistols in their pockets.* LAPORTE *eyes them*

deliberately, still smoking, but does not rise. HEMLOCK *and* WARCROSS *get up, staring sharply at the ruffians. The latter swagger over to centre,* BLOAT *foremost.* DUFFER *points to* LAPORTE.)

DUFFER (*aside to* BLOAT). Sa-ay, Ben, see that biled shirt?

BLOAT (*saucily, but warily*). We ain't come yar to fight. We didn't mean ter kill young Robins. He got in the way, he did, and had himself hurt. We don't bear no malice agin' nobody. We give up all claim to the gal. Let this yar grudge end whar it is. We don't want nobody's blood. Shake hands!

DUFFER (*swaggering*). Sa-ay, I don't care a cuss for the gal anyways. She ain't my style.

LAPORTE (*offensively*). I saw you two scoundrels throw open my door a while ago and spring back like thieves into the dark. You wanted to see whether I was in or not. Now mind, I would shoot you like dogs in your tracks, but that I scorn to kill you other than fair. Speak low, or you'll wake *her*. She'll hear your voices and come in. If you are armed, draw your pistols; I have mine. We will shoot across the table. Take your places, then!

BLOAT (*doggedly*). What d'yer want to spill our blood fer? We don't mean yer no harm, do we, Duff? nor bear ill will.

DUFFER. I wouldn't mind a little scrap in the least; I'm rather spiling for a fight, I am. If this is a free fight, you may count me in.

LAPORTE. You have murdered my friend, Will Robins, and insulted my wife and home. Take your places! Gentlemen, stand aside, if you please; we are about to fire.

HEMLOCK. Not two to one, I guess! Give me a gun. I'll meet Dan Duffer myself.

WARCROSS. And, by Gad, gentlemen, I'll see fair play or boldly perish in the attempt. (*Drawing Bowie-knife from his collar.*) This, happily, reminds me of my daily life in the town of Killikinnick, in the champion State of Illinoyse.

DUFFER (*tauntingly*). Go it, Bowie-knife!

BLOAT (*cringingly*). I say, I don't care to shed blood, nohow. We came in peaceable to make it up. We're both agreeable, ain't we, Duff? Forget and forgive, I say! (*Craftily.*)

HEMLOCK. That won't do, Ben; you didn't waste much mercy or pity on poor Will. Laporte means business. Get ready to fight square, and thank your stars that he didn't choose to shoot you down at sight.

WARCROSS. And no more monkeying about it, either, or I'm a snoozer.

DUFFER (*impudently*). Sa-ay, let's take a drink all round afore Laporte opens the ball!

(HEMLOCK *places lamp on shelf near door. All assume places by the table,* LAPORTE *and* HEMLOCK *on one side and* BLOAT *and* DUFFER

on the other. WARCROSS *brandishes knife behind the latter.* LAPORTE *watches the outlaws keenly while he takes a revolver from drawer of table and hands it over to* HEMLOCK, *who looks to see if it is capped. All look fierce.*)

LAPORTE (*with great nerve*). Thank you, Hemlock! Warcross, give the word to fire without counting. If either shoots before the word, knife him. Damn it, gentlemen, let's look cheerful! There's nothing the matter to be blue about. Are you ready? (*They cock their pistols.*)

DUFFER (*admiringly*). He's game, yer bet yer life.

WARCROSS (*with an absurd air of self-importance*). Make ready, gentlemen, and keep cool! I am! (*Aside.*) A cock-fight to the finish, by Jupiter!

(*All stand with weapons poised, in perfect silence, impatient for the signal. Breathless suspense for a few seconds.*)

WARCROSS (*emphatically*). Fire!

(*An instant before the word "fire," the door is blown suddenly in and the light is extinguished. Stage darkens. However, at the word they aim and fire wildly in the dark.* BLOAT *and* DUFFER *dodge.* WARCROSS'S *knife is heard to fall upon the stage.*)

WARCROSS (*in alarm*). You've smashed my tooth-pick.

(*A pause ensues, and all stand transfixed.*)

HEMLOCK (*in terror*). Great God! what's that? Will Robins's ghost?

(*Outer door remains open. Sound of banjo and singing in the distance of "Nelly was a Lady." In rushes* NELLY *from side-door, in night-dress, hair down, with lighted candle. Laughs hysterically. Stage lightens.*)

NELLY. It's Banjo Will, Guy! Don't you hear his music?

(WILL *languidly enters at back. Collar thrown loose, cravat untied, and hair disheveled. Face pale, but happy. Runs up to* NELLY *and* GUY *and, seizing their hands, presses them to his heart.* NELLY *laughs and cries in a breath.* GUY *clasps* WILL *to his breast.* WARCROSS *dances with umbrella.*)

LAPORTE (*with much warmth*). Will, my boy, thank Heaven, you are alive!

NELLY. Bless God he did not loose his life for me, my good, brave friend!

WILL (*feelingly*). Will you not call me brother, sister?

NELLY (*fervently*). Willingly, brother!

LAPORTE. And I also, Will, with all my heart!

WARCROSS. Me, too!

(HEMLOCK *and* WARCROSS *shake hands cordially with* WILL.)

HEMLOCK (*heartily*). You're a plucky lad, Will Robins, and I like you. But why are you still alive? How? We thought you were dead and done for! Gosh! I never felt so happy in all my born days before! (*Clapping his hands together.*)

WILL. I was sorely hurt and fainted with the pain, lying a long while in a swoon. Outside, the fresh air at length revived me. I gained my feet, and striking my faithful banjo, sang Nelly's favorite song, so as to break it gently to you that I was not a spirit. Thank God that I shall see my fond old mother once again, (*earnestly*) and home, sweet home!

(BLOAT *and* DUFFER *seem relieved and exchange knowing glances as they slink back towards the door, as if with intent to steal away.*)

WARCROSS (*loudly*). Stop! You're wanted, you snoozers, for attempted murder! (*All look towards the ruffians, who stand sheepishly hanging their heads, but lowering.*)

WILL. Let them go! I am the chief sufferer by their evil deeds, and I forgive them gladly. They may do better. Good-by!

LAPORTE. Generous youth!

HEMLOCK. Skip, you two.

WARCROSS (*regretfully*). Gouge-Eye is not the man he used to be at Killikinnick, in the stupenjus State of Illinoyse, or gore would surely flow! Vamoose! Slope! Mizzle! And never let us see your ugly mugs again at Pluto Mine. Git! (*Shoos at them.*) Absquatulate!

BLOAT. Our sand is saved.

DUFFER. And our necks. (WARCROSS *runs at them while they ridicule him but hurry away.*) Yer bet yer sweet life we're off!

BLOAT (*mocking*). Go in, limons, if yer do git squoze!

(*Exeunt* BLOAT *and* DUFFER.)

WARCROSS. They evidently know my dangerous reputation (*with a smirk to the rest*). You are safe, my friends, so long as the Warhorse is with you!

HEMLOCK. And Guy's good pearl-handled gun is near at hand, with his fearless eye and steady aim to back it.

LAPORTE. And your sturdy, honest arm, my friend, is not far off.

WARCROSS (*proudly*). Gouge-Eye an Argonaut? Co-lossial!

(NELLY *runs off at side and brings in* BABY, *taking it up to* WILL.)

NELLY. Your namesake, Will, dear brother!

WILL. And what more grateful token of a sister's love than her bestowing on her only child her brother's name? (*Kisses* BABY.)

NELLY (*with feeling*). Especially when that brother's soul is GOLD.

(*Orchestra plays "Nelly was a Lady," and curtain falls.*)

DAVID GRAHAM ADEE.

IRONCLADS IN ACTION.[1]

THIS work is one of the most valuable contributions to naval literature made in recent years. Though its title would appear to limit the scope of investigation to actions in which armor-clads have taken part, it gives, in a more or less condensed form, accounts of nearly all naval engagements that have taken place since the advent of armor in 1854.[2] The apparent aim is to present, with the assistance of every obtainable instance and side-light, not only a complete historical record of the behavior of the armor-clad and of its development, but the causes and bases of reasoning which have brought about existing conditions, as well as to furnish in the most convenient form a mass of solid fact to serve as a touchstone to our present theories. And this aim has certainly been achieved.

The value of historical fact as a guide for subsequent thought does not seem to admit of question; though that section of continental writers, called in France the *Jeune École*, has declared, and still contends, that the present age of automobile torpedoes, fast cruisers, and rapid-fire guns has produced conditions which are not comparable to those of sails and of the early days of steam and armor; and that deductive reasoning upon the operations of former years leads to false conclusions. Like reasoning upon other matters, it depends upon who draws the conclusions, and upon his capacity or fitness to decide whether circumstances are or are not parallel, and to judge wisely and without prejudice. It seems to the writer that many conclusions drawn from the results, operations, and incidents of the very recent battle of the Yalu are quite as erroneous and fully as lacking in foundation as any likely to be derived from study of battles of a quarter-century or more ago. Some of the most baseless of these deductions were made by leading lights of the *Jeune École* itself, who looked only at results—which, though containing facts, often conceal them from the superficial observer—instead of examining the real situation and determining which apparent causes were actual ones. In his introduction to Mr. Wilson's work, Captain Mahan

[1] Ironclads in Action, 1855–1895, by H. W. Wilson, with an introduction by Captain A. T. Mahan, U.S.N. Boston: Little, Brown & Co.; London: Sampson Low, Marston & Co.

[2] That is, in actual battle; the so-called Kinburn batteries in the Crimean War.

has considered the question of our dependence upon historical fact in a clear, brief, and convincing manner, treating it both from the logical and illustrative stand-points. He points out that, however meagre are the conclusions we are justified in drawing from history and experience, they furnish the only solid basis of fact for future guidance, and that theories and ideas must conform to them or be viewed with suspicion and distrust.

After a prologue describing briefly the Kinburn batteries and their use in the Black Sea, Mr. Wilson takes up the development of the armor-clad in the United States during the Civil War. The fight between the "Monitor" and "Merrimac" is given special attention, as well as the operations immediately preceding. In addition, almost every naval fight of any importance is given some attention. The passage of the forts by Farragut and the other operations on the Mississippi, the fight of the "Kearsarge" and "Alabama," and various other actions in which unprotected vessels only were engaged, are nearly as fully described as those in which armored vessels took part. The author's intention in this is to show the advantages and disadvantages of armored ships of that day compared to those of the unprotected vessel. Two more chapters on the Civil War, one on the "Southern Warfare Against Commerce," and the other upon the "Blockade and Blockade-Runners," follow; and, although less germane to the general character of the work, are not less interesting and instructive, particularly from a strategic stand-point.

As being the best order of arrangement for the study of the development of the armor-clad, events are considered chronologically, as nearly as practicable, so that the battle of Lissa next commands our attention. Reference to this action is so often made, and it has by most writers been so briefly described, that Mr. Wilson wisely devotes fifty pages to the battle and the preceding and subsequent events. The ignorance and incapacity of Admiral Persano are exhibited in the clearest possible light, and the author indulges in a running fire of sarcasm upon the actions of the higher Italian officers, a species of criticism they richly deserved, for their behavior was beneath criticism. The character and work of Tegetthoff, on the other hand, are duly appreciated, and the difficulties he met and surmounted described at some length.

Chapter XII. is devoted to the naval operations in the Franco-German War. This is a bit of naval history of which little is generally known. It is principally a record of uneventful blockades, and is commonly regarded as valueless as a study. It affords, nevertheless, two important lessons; the value of detailed preparation for war, and the necessity of well-protected, light-draught ships for offensive (as well as defensive) operations. The want of vessels of this type is likely to be felt by England in some future war, if she adheres strictly to her present policy of construction.

The naval operations of the Russo-Turkish War (Chapter XIII.) are hardly more interesting, consisting mainly, as they did, of actions between unimportant ships and torpedo work of a character not likely to be repeated. Had Russia possessed a navy strong enough to obtain command of the sea early in the war, she might have captured Constantinople, divided the Turkish empire, and, acting on interior lines from a secure base, have brought the struggle to a close in a few weeks, with a vast saving of money and life. She paid dearly for her inattention to her fleet, but her present activity in building appears to indicate that she has taken the lesson to heart.

A chapter on the Chile-Peru War is preceded by an account of the ridiculous action between the "Huascar" and the "Shah" and "Amethyst." The author treats the affair seriously, but it is hardly worth such consideration. The tactics of the British admiral remind one of the old Chinese plan of frightening your enemy with noise. Whether the attack was well or ill-advised, to remain at a range at which his projectiles were practically innocuous was absurd. The injuries to the "Huascar" were mainly confined to her paint and her boats, though a chance shot through the thinnest part of her side armor nearly perforated the backing, and the splinters killed a marine. The men at the "Shah's" forecastle gun were splashed with water from a ricochet shot, but fortunately the water is warm in those latitudes. This is the nearest that either of the British ships came to being hit in the hull, or having any one hurt. A Whitehead torpedo—"the first fired in actual war"—was launched at the "Huascar," but as the range was between fifteen hundred and two thousand yards, it is not surprising that "it had not speed enough to reach her." It is not recorded that any one on board the British ships shook his fist at the enemy, but, considering the character of the other operations, this is a war-like demonstration that should not have been omitted.

An excellent narrative of the Chile-Peru War follows the account of the "Shah"-"Huascar" *fiasco*. It is derived chiefly from the account of Lieutenant T. B. M. Mason, U.S.N., published in the War Series of the Office of Naval Intelligence, and, except for some supplementary details, is practically a condensation of Lieutenant Mason's report. The author does not seem fully convinced that, in the battle of Angamos, the "Huascar's" thin armor was a source of weakness rather than strength; for although he states that "the 'Huascar's' thin plating is said to have been a positive disadvantage to her by (entrapping and) exploding every shell which struck her," he adds, "but against the 'Shah' it saved her." As the "Shah's" heavy guns were of the same size and make as those of the heaviest on board the Chilean ships, the "Huascar" must have been saved by the prudent distance at which the "Shah" fought her and not by her armor.

The last chapter of Volume I. is devoted to the bombardment of

Alexandria. The author reaches the conclusion that 6- and 8-inch guns are more valuable than heavy pieces for the bombardment of forts, owing to the greater number of shots they can fire in a given time. He thinks that the only damage that can be inflicted on forts is the dismounting of guns which must be actually hit. The conclusions are drawn solely from the action at Alexandria, and they are certainly incorrect as regards modern forts with numerous heavy guns. Such works cannot be approached closely enough to render the attack upon separate guns worth the expenditure of ammunition and the punishment likely to be inflicted on the ships. The only hope of successful fleet attack of modern works seems to be in high-angle fire, unless the fortification is weak or ill-constructed, or unless other special features affect the problem.

The French operations in Tunis and China, with which the second volume opens, scarcely require notice. Like most recent naval fights, they are too much on the "jug-handle" order to afford many clear-cut lessons. The salient features of the Chilean revolutionary struggle of 1891 are the torpedoing of the "Blanco Encalada" and the advantage that the command of the sea gave the congressionalists. The operations of the war are all briefly described.

A short history of the naval revolt in Brazil is given in Chapter XVIII. While in the main correct, there are numerous errors of detail. The narrative seems to have been largely derived from the earlier newspaper accounts. The slow speed of the "Tamandaré" is ascribed to injury to her machinery. As a matter of fact, she was an uncompleted ship; of her two sets of engines, one only had been erected on board and that was not ready for service; while her boilers and auxiliary machinery were likewise only partly ready. But it is in regard to the attack on the "Aquidaban" that the most errors are made.

In the first place, the correct name of one of the Brazilian torpedo-boats is "Pedro Affonso," not "Affonso Pedro." The torpedo-boats did not run under the northern shore; in both cases they kept near the Santa Catalina shore,—in the first attempt so closely that they were discovered from Fort San José, and, seeing surprise impossible, turned back. In the second case, they kept farther from the land, but still on the Santa Catalina side. The "Aquidaban" was naturally discovered before she saw her enemy, and she did not fire upon the "Sampaio" until the hostile character of the latter was definitely determined. She was thought to be a supply-boat from Desterro which the captain of the "Aquidaban" was expecting. The officers of the "Sampaio" plainly heard Captain Alencar, of the "Aquidaban," give the order, "Don't fire! It is the steamer from Desterro." But the mistake was soon discovered. The plate facing page 46 shows the first torpedo as going across the "Aquidaban's" bow; instead, it passed under her stern before the "Sampaio" had turned sufficiently to starboard. The

captain of the "Sampaio" did not "take his boat around the stern." The tide did that for him. He was lying broadside to the current and was swept some distance beyond the "Aquidaban's" stern. It was then easier to come up on her port side, as the turn was not so sharp. The second officer "who was standing by the captain, seeing that there was danger of missing the 'Aquidaban' did not run aft and pull the laniard." In the first place the "Sampaio's" starboard tube was forward, just abaft the raised forecastle; and the torpedo was fired by the officer in charge as soon as it was trained and ready. Commander Correa was in the conning-tower on the forecastle, and not standing on deck, as would seem to be implied in the text. The crew of the "Sampaio" could not have been "surprised" to "see that the 'Aquidaban' did not change trim after being struck by the torpedo." In the first place, except for the captain in the conning-tower and an officer and man at the tube (and the latter ran below as soon as the torpedo was ready for firing), every one was below by Captain Correa's orders. Moreover, the torpedo was fired trained abaft the beam and the "Sampaio" steamed away so quickly that if the "Aquidaban" had sunk within two minutes the fact would not have been discovered; and, lastly, the night was so dark that Commander Correa said he could merely see the "Aquidaban's" bow lifted bodily on a huge but smooth and unbroken wave. The explosion was not heavy above water, and the sound was dull and muffled instead of a "violent crash." If the "Aquidaban" started her engines it was a foolish piece of business. She was at anchor and had not steam enough (nor coal to make much steam with, by the way, and it was this very lack of fuel which had brought her to anchor) to work her anchor engines nor her turret machinery. When taken possession of, it was found that a sail had been swept under her bow in the hope of stopping the hole, and that she had veered chain and kedged the stern in shore a little. Moreover, she did not "slowly sink until she took ground in twenty-two feet of water," for she did not sink at all, her bow grounding but lightly, depressed three or four feet below ordinary trim, the remainder of the hull being water-borne. She was not in danger of foundering, as stated. It was found impossible to do anything in the way of patching such an enormous hole, and she was taken to Rio de Janeiro under her own steam, though she may have had a towline out during part of the time. The projectiles which struck the "Sampaio" (all 1-inch Nordenfeldt), including those which hit her masts, rigging, and boats, were twenty-four in number, and not thirty-five. At least these were all I could find after careful search, and were all that were known to the "Sampaio's" officers.

The China-Japan War is treated at considerable length, especially the Yalu fight. The account was written before the appearance of Captain McGiffin's articles and the criticisms of Captain Mahan, but the author makes the necessary corrections—and they are few—in the

foot-notes. His conclusions are carefully and skillfully drawn, and agree in the main with the generally accepted ideas. He sums up by stating that "with the exception of the danger of fire, the Yalu has done nothing but emphasize principles already known and understood."

The next chapter is devoted to the "Naval Battle of the Future," and contains a fund of thought and information too varied for a review to be attempted. It is followed by "Ironclad Catastrophes." These include the losses of the "Captain," "Vanguard," "Grosser Kurfurst," and "Victoria." The "Development of the British Battle-ship" is next treated. The various types of ships are briefly described and criticised, and then a few pages are devoted to guns, armor, torpedoes, etc. In Appendix I. is given the "Development of the French Navy, 1855–1893." The remainder of the Appendix is given up to twenty-five tables for reference while reading the text, and to a formidable list of authorities consulted. The work closes with an exceedingly complete index, a most valuable and too often omitted, or ill-treated, part of books of reference.

To those who wish to form their ideas of warfare from a personal investigation of the facts, rather than from the dictum of others, this work is invaluable. And no matter how close a student of naval affairs one may be, he is sure to find in its pages information that is both new and interesting.

L. S. Van Duzer,
Lieutenant U.S.N.

NAVAL PROGRESS IN 1895.

HEAVY GUNS.

THE question of the proper calibre of the principal guns of first-class battle-ships has been much discussed during recent years, and the conclusions reached, in many quarters, are surprising and apparently indefensible. It seems reasonably certain that the heavy guns of battle-ships are principally designed to pierce the armor of possible enemies, and thus inflict injury upon what are styled the vital parts; and it appears equally certain that any gun which is unable to do this fails to possess the principal requirement of a heavy gun for the primary battery of a battle-ship of the first class. Yet the latest German battle-ship (designed in 1894), a so-called "first-class" ship, will mount guns of 9.45-inch calibre. Pieces of this size have, in the opinion of the writer, no *raison d'être*,—except possibly in coast-defense vessels. They are too light for the successful attack of heavy armor (the thick armor of the "Iowa" or "Indiana" is impenetrable by them at the muzzle on the proving ground), and unnecessarily and objectionably heavy for the attack of the casemate and citadel armor now so generally fitted. The same weight in heavier or lighter guns would be a vast improvement. In fact, taking into consideration the present power of guns, the resistance of armor, and the design of ships, the writer believes that the only really desirable calibres of guns are 13-inch, 8-inch, 5-inch, 4-inch, 6-pounder, 1-pounder, and machine guns. The 13-inch is needed for the attack of thick armor, the 8-inch for casemate armor, the 5-inch for the destruction of unarmored upper works, etc. The 8-inch gun is the proper heavy gun for the armored cruiser, or what, in these days, is nearly the same, the heavy protected cruiser. The 5-inch, being the largest true rapid-fire gun, has a wide range of usefulness. And the 4-inch is a valuable light cruiser gun.

In the *Army and Navy Year Book* for 1895, published a year ago, the writer stated that "the reaction against heavy-calibre guns has apparently reached its limit, and we may again expect a slight increase if there is any further improvement in armor." The improvement in armor has taken place, and, in the United States, at least, the increase in calibre of the heavy guns has followed it, the guns of the new battle-ships being of 13 inches, while those of the "Iowa" are but 12. In

other services the limit still remains at 12 inches or less, but with a general tendency towards increased length. All the new French 12-inch guns are of 45 calibres length, and 12-inch of 50 and 55 calibres are under consideration. The French method of construction is adapted to the production of long and light guns. If it proves to be suitable for smokeless powders, as it seems to be, the effect upon ordnance and ship design will be very marked. All the heavy calibres are built up in a similar way. The new 305-millimetre (12-inch) may be taken as an example. There are two tubes, inner and outer, extending from breech-face to muzzle, and a single row of hoops over the breech. The outer tube is in two parts of about equal length, the joint covered by an additional light hoop. There is no powder-chamber; or rather there is one, but it is of the same diameter as the bore measured to the bottoms of the grooves. The screw-box is in the rear end of the inner tube. The gun is trunnionless, and has lugs and grooves for a saddle and straps. In the median calibres (9.45-inch to 5.46-inch) either the outer tube or the jacket is omitted; some are made with a single tube and jacket, others with two tubes—the outer in several sections—and no jacket. The latest model of the 6.48-inch is an exception, however, having a long jacket and eight thin breech-hoops.

One of the most notable features of the new French guns, both of government and private construction, is their exceeding lightness. For example, the 305-millimetres (12-inch), L/45, weighs but 45.02 tons, whereas the United States and British 12-inch guns, L/35, weigh 45.2 and 46 tons respectively. If this lightening of heavy ordnance proceeds within safe limits and side by side with the development of suitable powder, it will be hard to say what will be the limit of length for naval guns.

The new British 12-inch guns are said to give satisfaction, but the advantages gained by the use of wire seem doubtful. They are said to be: 1. The certainty of there being no flaw in the material. 2. The initial tension can be regulated with the utmost nicety. 3. Steel wire has double the tensile strength of steel forged in tubes or hoops, and this increased margin of strength not only adds to the margin of safety, but will allow increased charges to be used without increasing the weight of the gun, and also provides a margin to meet sudden rise of pressure due to unforeseen circumstances, such as might occur with powders stored in hot magazines. Flaws that seriously affect the strength of a tube are not likely to occur; we might almost say will never occur in good material, properly worked and carefully inspected. There is an advantage in the nice adjustment of the initial tension, but is the adjustment permanent? Lastly, is the additional tangential strength worth the trouble and expense when associated with decreased longitudinal strength and stiffness, greater vulnerability, and greater

weight? The designed muzzle velocity of the gun is no higher than would be obtained in a United States built-up 12-inch gun using cordite and the same projectile. In fact, using Leonard smokeless powder, which is similar to cordite, but apparently better, an American 35-calibre 12-inch gun will give about 2600 f. s. velocity, with the service projectile of 850 pounds and a safe chamber-pressure about equal to the pressure ordinarily used in the service.

The new British 6-inch wire-wound guns are even less to be admired. The length is 40 calibres, weight 7 tons, or 1 ton more than the American 40-calibre 6-inch. With cordite, the expected muzzle-velocity is 2200 feet, while with our new gun-cotton smokeless powder, the American gun has given over 2600 feet, and the service velocity with brown powder is 2150. Moreover, the first and weakest 6-inch gun built for the United States naval service withstood continuous firing with a chamber-pressure of 27 tons per square inch. Other and more severe tests, of which we are not at liberty to speak, have shown that the strength of our built-up guns is vastly greater than any possible strain to which they will ever be subjected.

Taking everything into consideration, it seems probable that the wire-wound gun, as we know it to-day, will not form part of the ordnance of the immediate future, unless we return to quick-burning powders or higher service pressures. The use of wire reduces the longitudinal strength and stiffness, without which long guns of moderate weight are impossible.

Continental powers seem to be following the French in great length of guns, but while they have not gone quite so far in that direction, they have gone further in the reduction of calibre. Their conclusions as to calibre are, consequently, less defensible. The Austrians have placed 9.45-inch guns on their new coast-defense vessels and are building no large battle-ships, but they say that if they were, the 9.45-inch gun is the largest they would mount. The Germans are said to have adopted 9.45-inch for the heaviest calibre in their latest first-class battle-ship. The Russians have never used guns larger than the 12-inch, and there are no signs of change in calibre. They have used long guns for years, and in this respect are, at present, following the French. The Italians, who have always been extremists in naval matters,—size of ships, thickness of armor, removal of armor, size of guns, reduction of displacement, reduction of gun calibre,—have adopted the 10-inch gun for their new so-called first-class battle-ships; vessels which are, by the way, nondescript constructions hardly fit to take rank in the second class of other powers.

RAPID-FIRE GUNS.

The development of the rapid-fire principle is being carried further every year, and it seems probable that in the near future some form of

metallic cartridge-case will be used for all calibres. It may be merely a cap over the rear end of the charge, or last section of the charge, or it may cover the whole. The advantages of fixed powder-charges are increased speed of loading, less length and weight of gun and breech-plug, avoidance of the troubles with obturating pads, etc. To secure these advantages in part, the rear section of the charge only need be cased, or capped.

The term "rapid-fire," or, as the English call it, "quick-fire," is being much misused, and it is time we revised our nomenclature. All guns are more rapidly worked than in former days, and all new breech mechanisms are more or less automatic and rapid working. In the compilation of the *Army and Navy Year Book* for 1896, the writer adopted the following terms:

Semi-Rapid-Fire Guns (S. R. F. G.),—*i.e.*, those guns which have rapid-working breech mechanism and a metallic cartridge-case, but with projectile and charge separate.

Rapid-Fire Guns (R. F. G.): guns with rapid-working breech action and fixed ammunition, projectile and charge in one.

Machine Guns (M. G.): rapid-firing guns of a calibre less than 37 millimetres (1.46 inches), having automatic feed, or a group of barrels, or both. The difference between S. R. F. G. and R. F. G. is really about as great as between the former and guns using cartridges in bags. And it is worse than silly, it is a misleading perversion of terms, to call any piece a rapid-fire gun which has its charge in a cartridge-bag.

The largest true R. F. G. in regular service afloat is, I believe, the United States naval 5-inch. The French have been undecided about their 5.46-inch; but recent reports are to the effect that the ammunition will be supplied with projectile and charge separate. Many private manufacturers have made fixed ammunition for 6-inch guns, but no nation has, so far as reported, definitely adopted it. The projectile is so heavy that the cartridge-case must be very stiff to hold it without buckling; the total weight then becomes too great, and there are, besides, other objections.

The largest true S. R. F. G. is the French 6.48-inch. In other services, 6 inches is the maximum; though Armstrong, Krupp, and Canet have all fitted guns of larger calibre for using cased powder charges. The confusion of terms has made it difficult to obtain precise information in regard to the practice of private gun-factories. Much has been made of the 6-inch gun, partly because it is called a rapid-fire gun,—showing that there is a good deal in a name after all. The rates of fire of a 6-inch S. R. F. G. and a 5-inch R. F. G. are in the proportion of about 1 to 3. A careful investigation has led the Office of Naval Intelligence, United States navy, to adopt the following table as expressing the average rates of fire obtainable under ordinary conditions of service:

Calibre of Gun.	Rate of Fire.
12 inches	1 round in 6 minutes.
10 inches	1 round in 6 minutes.
8 inches	1 round in 3 minutes.
6 inches	2.5 rounds per minute.
5 inches	6.5 rounds per minute.
4 inches	8.5 rounds per minute.
6-pounder (2.24 inches)	11 rounds per minute.
3-pounder (1.85 inches)	12 rounds per minute.
1-pounder (1.46 inches)	15 rounds per minute.

M. de Vignaux, one of the ordnance engineers of the Compagnie des Forges et Chantiers de la Méditerranée, gives the following table:

Calibre of Gun.	Rounds per Minute.
24 centimetres (9.45 inches)	0.5
19 and 20 centimetres (7.47 and 7.87 inches)	0.75
15 and 16 centimetres (5.99 and 6.29 inches)	5
12 and 14 centimetres (4.72 and 5.51 inches)	6
10 centimetres (3.94 inches)	7
65 millimetres (2.56 inches)	10
57 millimetres (2.24 inches)	12
47 millimetres (1.85 inches)	13
37 millimetres (1.46 inches)	15

This table cannot be regarded as even distantly approximate for rates of fire of calibres between 6.29 and 4 inches. It is unduly favorable to the heavier pieces.

The following table was arranged by the compiler for use in computing the fighting value of armored ships of all navies. A large amount of data was carefully examined and duly considered, and the allowances are believed to be liberal. The assumed basis is that of average battle conditions instead of those of piece service, target practice for speed, or proving-ground trials. The two tables above given have since fallen into the compiler's hands, but in this table no changes have been made in the original figures.

These figures differ very much from those given out by private gun-makers, but they are quite as high as will be attained in actual battle. The Japanese state that, at the battle of the Yalu, the best rate of aimed fire from a 6-inch Armstrong S. R. F. G. was one shot per minute. This was when nearest the enemy; at longer ranges it was much slower, but as these ranges were abnormal, the fact is unimportant. They were, however, able to maintain, for short intervals, a speed of three shots per minute from the 4.7-inch R. F. G. These rates of fire could not be kept up, partly on account of the difficulty of supplying the ammunition fast enough, but principally because of the heating of the guns, especially those using cordite charges.

The casemate and turret mounts, referred to in the table, are supposed to have the ammunition delivered close at hand; the deck-pieces to require short transport on deck; and all figures are for first-class battery installation of the latest type, and for shots aimed with reasonable accuracy.

Calibre.	Rounds per Minute, Gun mounted.		
	On Open Deck, Gun Shield only.	In Casemate.	In Closed Turret or Efficiently-Shielded Barbette.
16-inch	. . .	. . .	0.12*
13.5-inch	. . .	. . .	0.18* 0.25†
13-inch	. . .	. . .	0.20* 0.30†
12-inch	. . .	. . .	0.22* 0.33†
11-inch	. . .	. . .	0.23* 0.33†
10-inch	0.15	. . .	0.25* 0.33†
9.5-inch	0.17	0.22	0.25* 0.35†
9.2-inch	0.20	0.25	0.25* 0.40†
8.0-inch	0.33	0.5	0.6
6.48-inch S. R. F. G.	0.50	0.75	0.75
6.0-inch S. R. F. G.	1.0	2.5	2.5
5.5-inch S. R. F. G.	1.5	3.5	3.5
5.0-inch R. F. G.	3.5	6.0	6.0
4.7-inch R. F. G.	4.0	6.5	6.0
4-inch R. F. G.	6.0	8.0	7.0
12-pounder (3-inch) R. F. G.	8.0	9.5	
65-millimetre (2.56-inch) R. F. G.	9.0	10.5	
6-pounder (2.24-inch) R. F. G.	10.0	12.0	
3-pounder (1.85-inch) R. F. G.	11.0	14.0	
1-pounder (1.46-inch) R. F. G.	12.0	16.0	

* Power loading, fixed loading station. † Power loading in any position.

In rapid-fire guns the danger of "hang-fires" is a serious one, and many breech mechanisms are so arranged that they cannot be opened until the cartridge explodes except after drawing back the firing-pin by hand, or releasing a catch or other device. While the French battleship "Bouvines" was testing her battery recently, a cartridge in a 3-pounder Hotchkiss R. F. G. hung fire until after the breech was opened and then exploded with fatal effect, killing the man operating the piece and an officer, and seriously wounding another. This gun was not fitted with a safety lock, though the Hotchkiss Company fit their guns with a safety device if desired.

The length of rapid-firing guns has increased even faster than that of larger pieces. The new 6-inch S. R. F. G. is now generally 40 calibres; 5.46-inch, 40 to 50; 5-inch, 40; 4.7-inch, 40 to 50; 4-inch, 40 to 50; 6-pounder, 40 to 50. The British naval S. R. F. G. and R. F. G. are nearly all of 40 calibres; the German, 30 to 50; the French, 45 to 60; the American, 40; and the Italian, 35 to 40. The Krupp, R. F. G. are of 30 to 50 calibres length. Armstrong makes but two of 50 calibres length, a 6-inch and a 4-inch; the others are 40 to 45. Canet, who is the greatest advocate of very long guns, now builds S. R. F. G. and R. F. G. for service as follows: 6.48-inch S. R.

F. G., 45 and 60 calibres; 5.9-inch, 45 and 60; 5.51-inch (S. R. F. G. or R. F. G), 45 and 60; 4.7-inch R. F. G., 45, 60, and 80; 3.94-inch 45, 60, and 80; 3.54-inch, 60 and 80; 2.95-inch, 60; 2.56-inch 60 and 80; 2.24-inch (6-pounder), 80.

All the principal naval powers are converting their later-type B. L. guns of small and moderate calibre to R. F. G. and S. R. F. G. The French led the way, and they have now fully supplied their armored ships and principal cruisers. The British followed suit, and all their newer ships, fitted with B. L. R., have received new batteries. In the United States no changes of this sort (except in a few old ships) have yet been effected, but the work will be prosecuted rapidly in 1896.

GUNPOWDER AND EXPLOSIVES.

The use of smokeless powders is now becoming so general that we are beginning to learn their defects and good qualities and to be able to form an opinion as to possible improvement. The dangerous instability of potassium chlorate powders removes them from the list of present possibilities. Picrate powders have, so far as the compiler has observed, proved rather deficient in power compared with the maximum chamber-pressure, though several have given very fair results. There are a number of powders which cannot be classed owing to doubt as to their composition; as they have not given particularly good results, they need not be considered. The powders with nitro-glycerin or nitro-cotton bases seem most in favor at present. The former is represented by cordite in England and the Leonard powder in the United States. Both give high velocities associated with low pressures. In this respect the Leonard powder is superior; indeed, the results obtained with it have never been equaled. All nitro-glycerin powders (*i.e.*, those having a nitro-glycerin base) have the following grave defects: instability, erosive action, excessive heating effect, and irregular pressure and velocity. Instability is due either to decomposition or exudation, and it may be brought about by storage at temperatures only slightly exceeding the normal summer heat, or by freezing. The erosive action is apparently due to the amount of oxygen in the explosive. Mr. Hudson Maxim, of New York, who is a chemist and a brother to Mr. Hiram S. Maxim, the well-known inventor, has lately been making experiments in all sizes of guns up to the 10-inch calibre, and he has found that with smokeless powders containing a very large percentage of nitro-glycerin,—50 per cent. or more,—and where the carbon is converted into CO_2, the temperature is so very high that some of the CO_2 takes up another atom of carbon from the steel of the gun, with the result that the surface of the bore is changed from steel to wrought-iron; it is thus made softer, and this softened surface is rapidly rubbed away by the projectile and eroded by the gases. Mr. Maxim has also found that if the percentage of gun-cotton is high, with not more than

10 per cent. of nitro-glycerin, the products of combustion are largely CO instead of CO_2, and the reduction of the steel and the resulting wearing away and erosion of the iron is much diminished. Mr. Maxim, therefore, is of the opinion that the percentage of nitro-glycerin in smokeless powders should not be high. The heating of the piece with nitro-glycerin powders is also due to the large supply of oxygen, the perfect combustion producing a higher temperature.

There are numerous nitro-cotton powders, among them the new United States navy K smokeless; and as the results of experiments with it are available, it will be taken as the standard of comparison. The temperature of the explosion of gun-cotton is stated by Von Winch to be 2516° C., and that of nitro-glycerin 3005° C.; the former, therefore, is much less liable to heat the gun to a troublesome extent. As comparatively little CO_2 is formed, owing to the small supply of oxygen, there is little or no erosion of the bore. The stability of the powder seems to be excellent; exudation is, of course, eliminated; and there is apparently no danger of disintegration at any temperature to be expected in service, as the powder has been subjected to a temperature of 100° F. three months, and to 160° F. for a somewhat less period, without appreciable change in its characteristics. As regards power and pressure the results are highly satisfactory. In the 1-, 3-, and 6-pounder R. F. G. of 40 to 45 calibres length, the velocities attained were respectively 2200, 2400, and 2500 f. s. with 15 tons pressure. In a 40-calibre 6-inch gun the results were: velocity 2344 f. s., pressure 12.6 tons; velocity 2407 f. s., pressure 13.8 tons; velocity 2495 f. s., pressure 15.1 tons. With Troisdorf powder the results in a 35-calibre gun were 1904 f. s. and 15.9 tons pressure. Results of similar character have been obtained in the 4-inch R. F. G. Experimental charges are being prepared for all guns up to the 13-inch, and they will soon be tested. Six-pounder cartridges filled with this powder were issued to vessels of the North Atlantic Station for test on board ship. The reports of the tests state that the powder gave a light bluish-white smoke which quickly dissipated and did not obscure the target. Between decks, however, the smoke accumulated to some extent. This was probably from the black powder in the igniting charge.

The firing tests with cordite, Leonard, and several other nitro-glycerin powders have been eminently successful as regards velocity and pressure. Cordite is said to keep well, but several reports indicate that it requires great care to prevent degeneration. The prime faults seem to be the excessive heating of the gun and the erosion of the bore. The remedy is probably to reduce the quantity of nitro-glycerin or to add some easy oxidizable substance which will reduce the CO_2 to CO as fast as it is formed or which will prevent its formation, the powder being kept up by the formation of a larger total volume of gas at the lower temperature developed.

The Leonard powder has given 2800 f. s. velocity in a 40-calibre 4-inch gun with a maximum chamber-pressure of 17 tons. It is not seriously erosive so far as observed, but no account of extended erosion trials has been seen by the compiler. Its greatest fault is instability from exudation. Recent samples contain less nitro-glycerin and more gun-cotton and the keeping qualities are said to be much improved. Doubtless, also, its erosive action is less.

The *Army and Navy Journal* says, "Smokeless powder for the field-guns of the army will probably be issued to the service within the next six months (that is, before January 1, 1896). Experiments which have been made with samples of this explosive of the Maxim variety have given excellent results, not only in the way of velocity but in pressure. The Army Ordnance Department has also been experimenting with smokeless powder and brown powder for the big guns. In the 10- and 12-inch guns the brown powder has given velocities with 15 tons pressure of something more than 2100 feet per second. The Patten powder, which contains twenty-five per cent. nitro-glycerin, has given high velocities in the small guns, and samples are now being manufactured to be fired in the big guns. The Maxim powder, 10 per cent. of whose composition is nitro-glycerin, has given 2250 feet per second in the 10-inch gun with pressures below fifteen tons. The German powder has been tried in the 12-inch gun with good results, a velocity of 2385 f. s. and pressure less than fifteen tons having been secured. The French gun-cotton powder has given about 2200 feet per second with low pressures. The ordnance authorities will now begin the keeping test of some of the samples. It is the determination of the authorities to continue experimenting until they have secured an ideal smokeless powder for both small and big guns."

ARMOR.

A year ago many writers on ordnance and armor seemed to think that we had nearly reached the limit of possible improvement of face-hardened armor. A comparison of the principal tests made in 1894 and 1895 (see the *Army and Navy Year Book* for 1895 and 1896) will show that they were mistaken. The Harvey process, or some other method of face-hardening similar to it, is now used by nearly all armor manufacturers, and the few remaining defenders of homogeneous plate are becoming fewer. Austria, Italy, the Netherlands, and Sweden are fitting their new ships with homogeneous nickel-steel plating, but the contracts were made a year or two ago; and probably future proposals will call for the face-hardened article.

The Harvey process, slightly modified by each maker, is used in the United States, Great Britain, and France. Schneider is developing a gas process of carbonization, and Krupp has a process of his

own which is supposed to be practically identical with the Harvey. In all countries, except Great Britain, the plate, before treatment, is of homogeneous nickel-steel, containing from 2 to 3.5 per cent. of the alloy. The American armor has the highest percentage, that in Europe being usually 2 to 2.5. A greater proportion, perhaps, is desirable, but has not been used on account of increased cost and difficulty of working. These reasons have caused the British Admiralty to give up the use of nickel altogether. The Admiralty's defenders claim that surface-hardened carbon-steel, without nickel alloy, gives a greater resistance to penetration. But they can certainly produce no proof of this. The facts, indeed, are exactly opposed to it. The general procedure of the British Admiralty in regard to armor is very peculiar. There are no true acceptance trials. Thick plates are forged down to 6 inches and tested. The result of this test is supposed to determine the character of the original plate, a wholly fallacious supposition, which is a relic of the days of wrought-iron; and it was only approximately true then. The absence of nickel in the British plates render them very brittle, a fact strongly brought out in their foreign competitions, in which the contract was three times lost to British manufacturers on account of brittleness. As the Admiralty tests no thick plates (nor do the private makers, so far as I can learn), the real brittleness of their production is not fully appreciated.

In Germany, Krupp and the Dillingen Company are both using surface-hardening processes; the latter, however, has turned out very little armor. Krupp has made, and is making, some excellent plates; but for some reason his product is of very irregular quality. He presented plates in the "Texel," "Pola," and "Okhta" trials of 1893, but they were decidedly poor. Yet he had previously turned out several very fine ones. The trials of recent experimental plates show them to possess exceptional resisting powers, if the projectiles used were up to the highest standard; but even if the projectiles were of the best, with the previous history of Krupp armor before us, we would still be uncertain whether they are representative plates or accidental productions appearing among a lot of comparative failures.

Of the French government trials we know comparatively little. Judging from the few competitive trials for foreign orders, in which French manufacturers have taken part, and from other meagre reports, the average quality of French plates is good. Certainly, their later homogeneous plates have rarely been excelled.

Neither Russia nor Italy are producing face-hardened armor in large quantities,—so far as the compiler has learned, in the latter none is made nor used. Russia has placed her latest orders in the United States,—the result of competitive trials,—one with the Bethlehem Company and the other with Carnegie. The previous orders were mostly placed in France.

In the United States, armor development has proceeded with astonishing regularity. From the production of the first Bethlehem steel plate, there has scarcely been a check in the continuous improvement. The culmination is the double-forging process of which the value is so clearly shown in recent trials. In comparing American armor trials with those taking place abroad, allowance must be made for the fact that, except as regards the few experimental plates, our trials are tests of armor which is intended for service. More than this, the test-plate is selected from the lot by the government inspector, and is supposed to be the poorest plate of the group. The other plates are all believed to be somewhat better, and tests of several suspected plates confirm this belief. Some foreign trials are conducted on the same lines, but the greater part are not.

Were it not for the parallel improvement in projectiles we would to-day be able to say that, in the fight for supremacy, armor had won. As it is, armor has advanced its relative position so that we are able to give a ship belt and barbette armor which cannot be perforated by a 12-inch gun, even on the proving-ground; and a 14-inch plate will stop a 12-inch projectile in any ordinary battle conditions, and would probably prove too much for the 13-inch gun unless favored by accident.

The improvement in thinner armor in the United States is no less marked. The facts are yet to be developed, but it seems probable that the latest 7-inch plate stands in about the same relation to the 8-inch gun that the 14-inch plate does to the 12-inch.

The theory of decrementally surface-hardening homogeneous plates is, as Captain Sampson, Chief of Ordnance U.S.N., says, undoubtedly the correct one; and it is not likely to be superseded in the immediate future. No matter how good a homogeneous plate may be its resisting power can be increased by hardening its face,—especially its resistance to oblique impact. The gradually-decreasing hardness offers no distinct plane of demarkation; the flaking, or separation of face and back, therefore, only extends to the parts struck, cracked, or stretched. The theory of the old compound armor was correct, but the method of carrying it out was defective.

There is no reason to suppose that we are approaching the limit of resisting power attainable in armor. There are numerous plans for its improvement under consideration or experiment. Lieutenant Ackerman proposes to increase the depth of the carbonization by ridging or gashing the surface. If successful, this plan will prove of decided value for thick plates. Chrome-steel, chrome-nickel-steel, and ferro-nickel are being experimented with; tungsten-steel, and steels with high percentages of nickel, or of high percentages of both carbon and nickel, are suggested; while various other alloys are attracting some attention.

NAVAL AND MILITARY NOTES.

SHIPS AND TORPEDO BOATS.

ARGENTINA.

"BUENOS AIRES": DESCRIPTION, TRIALS.—Like many previous vessels built by Sir W. Armstrong, Mitchell & Company, the "Buenos Aires" was commenced without an order and probably without any definite idea as to her ultimate ownership. Work was begun February 2, 1893, and the launch took place May 10, 1895. The hull is of steel and it was not originally intended to be sheathed, but after purchase by Argentina the sheathing was added. The main deck is flush, with uncovered central battery enclosure, bridges forward and aft, and fore-and-aft flying gangways connecting them. There are two masts, each carrying a military top about twenty feet above the main deck and a lookout top about thirty feet higher. The principal characteristics are:

Armament.—Two 8-inch guns, one forward, one aft, protected by thick circular armored shields; these guns have so-called automatic breech action and are styled "quick-firing" (rapid-fire) guns, but they are fitted with modified De Bange gas checks, and the cartridge, enclosed in bags, is in two sections. Four 6-inch S. R. F. G. are mounted, one in each corner of the battery enclosure, two firing ahead, two astern. The twelve 4.7-inch R. F. G. are in broadside, six each side between the 6-inch guns. There are also sixteen 3-pounder and eight 1-pounder R. F. G., of which two 3-pounders are on each bridge. There are five above-water torpedo-tubes, one in the stem and two each side.

Protection.—Complete protective deck, 5 inches thick on the slopes over the machinery, 3 inches on the slopes forward and aft, and 1.5 inches on the flat throughout. Thwartship screens extend across the ship at the ends of the battery enclosure. The gun-shields are unusually thick, mostly 4.5 inches. The conning-tower has a thickness of 6 inches.

Motive Power.—Twin-screw, 4-cylinder, triple-expansion engines; cylinders 40, 60, 66, and 66 inches, stroke 36 inches. The boilers are

of the ordinary return-tube marine type. Capacity of coal bunkers, 1000 tons.

Dimensions.—Length between perpendiculars, 396 feet; length over all, 424 feet; extreme breadth, 47.2 feet; mean draught, 18.3 feet; displacement at this draught, 4740 tons.

TORPEDO-BOATS ORDERED.—Four torpedo-boats, of the *Sokol* (Russia, 240 tons, 29.8 knots) type, have been ordered from Yarrow, of Poplar.

BRAZIL.

SUBMARINE TORPEDO-BOAT "GOUBET II.": DESCRIPTION.—The following description of this boat, which has not yet been named by the Brazilian authorities, is from the *Army and Navy Gazette* of December 7, 1895, and agrees with the other published reports:

"M. Goubet, the trials of whose submarine boat at Cherbourg, between 1889 and 1891, created some sensation at the time, has constructed a 'Goubet II.,' with improvements, which is about to be sent from Paris to Argenteuil for trials. The 'Goubet II.' may best be described as cigar-shaped, with a point at each end, and a circular section, the length being 26 feet 3 inches and the extreme diameter 5 feet 9 inches, to which must be added a dome amidships about 1 foot high. The material of the hull is bronze, the plates being $\frac{7}{8}$ inch thick amidships, diminishing to about $\frac{1}{4}$ inch, and the construction is a series of rings bolted together and successively of smaller size towards the points. There is a fin underneath, answering to a keel, and one on each side designed to steady the craft. Propulsion is by means of a screw driven by a small dynamo, and there are two oars articulated through water-tight openings, which ordinarily lie alongside, but may be used upon occasions. The depth of immersion is regulated by the expulsion of water from a reservoir or the taking of it in, the pumps being worked by dynamos, and a most ingenious arrangement permits a determined depth to be maintained automatically. A like arrangement insures longitudinal stability; but, if anything should go wrong, a weight of 1200 kilos can be detached below, and the craft will rise to the surface. Reservoirs of oxygen supply the loss caused by respiration. Each lateral fin supports an automatic torpedo, which is discharged by allowing the mechanism of the torpedo to operate. According to M. Goubet, his craft may be furnished with shears for cutting torpedo-nets or electric wires or cables. The 'Goubet II.' is doubtless a very interesting vessel, but its value as an engine of war is highly problematical."

CHILE.

"ESMERALDA:" BUILDING.—This fast armored cruiser is building at Elswick. The battery will consist of 8-inch B. L. (so-called R. F. G.—see remarks about the battery of the "Buenos Aires," given

above); 6-inch S. R. F. G.; 12-pounder, 6-pounder, and 1-pounder R. F. G.; and Maxim machine guns. The exact character of the protection has not yet transpired, but there is to be a water-line belt and a protective deck. The displacement will be about 7300 tons at mean load and the speed 23 knots.

DENMARK.

NAVAL ESTIMATES FOR 1896.—The Danish naval estimates for 1896 have been published. The ordinary charges amount to 6,851,848 kronen ($1,836,295.26; 1 crown = $0.268), and the extraordinary to 626,200 kronen. In the ordinary votes appears a last charge of 200,000 kronen for the completion of the coast-defense ship "Skjold" (2150 tons). It is contemplated to lay down a smaller coast-defense vessel of the type of the "Lindormen," of 1500 tons, and a first vote of 200,000 kronen is asked for this purpose. A sum of 180,000 kronen will be asked for the construction of two first-class torpedo-boats and four third-class boats. For the repair of ships 747,100 kronen are asked for in the ordinary, and 116,200 in the extraordinary votes. The trading brig "Oernen" is to be thoroughly repaired, and the battle-ship "Heligoland," besides receiving new boilers, is to have a 4-inch armored deck substituted for the old 1.8-inch one. The training-corvette "Dagmar," the surveying-ship "Hauch," and the gunboat "Falster" are also to be provided with new boilers. The sum of 98,000 kronen is required for Maxim guns, 30,000 for other machine guns, and a first vote of 50,000 kronen for high-explosive shells. For training and practice purposes 800,000 kronen are demanded, and it is proposed next year to form an evolutionary squadron of several vessels for fleet exercises.

FRANCE.

Owing to the failure of the budget as originally prepared, but little new work, not already contracted for, is to be taken in hand during the first part of 1896.

"BRENNUS": TRIALS, DESCRIPTION.—The alterations in the upper works of the "Brennus" are completed and she has been for some time under trial. The highest speed attained (November 13, 1895) was 16.7 knots, in a heavy sea, the force of which depressed the deck at the bows four inches—bending the beams, buckling the plates, starting a good many rivets, and compelling the ship to return to port. The maximum anticipated speed under favorable conditions is 17.5 knots. It is reported that she has maintained 18.2 knots for a few miles.

The "Brennus" has a peculiar history. Built at Lorient dock-yard, from the plans of M. Huin, the designer of the "Magenta" and

"Hoche," she was laid down on January 2, 1889, and launched October 17, 1891. She arrived at Brest in August, 1894, but on her short passage from Lorient, made in rather bad weather, her behavior was such as to cause grave apprehension for her safety. She heeled 10 degrees with a 10 degree helm angle, and rolled in the slow, irregular way peculiar to ships of deficient stability. Her small righting moment was due to weights added in building, chiefly in superstructure. The alterations effected and recently completed involved the removal of 500 tons from her upper works. The superstructure has been cut down and the after military mast replaced by a light signal mast.

The "Brennus" is a first-class battle-ship of peculiar type. The main deck is flush, without much sheer, and there is a rather narrow central superstructure between the turrets, with a double-decked bridge-house at each end supporting a flying deck above the superstructure. There are two smoke-pipes and a single military mast, the latter supporting a large fighting-top, a smaller one above it, and a search-light platform over the latter. The hull is of steel, without sheathing, and the stem is vertical. The complement is 700 officers and men. The principal details are:

Armament.—Three 13.4-inch, L/42, B. L. R., M/91 and 92; two in a closed turret forward, one in a closed turret aft. Ten 6.48-inch S. R. F. G.; six in a central armored casemate on the gun-deck, three each side, forward and after guns firing nearly forward and aft, respectively; four mounted singly in small closed turrets, two each side, on the main deck over the casemate. There are also carried four 2.56-inch R. F. G., fourteen 3-pounders, eight 1-pounders, and 7 machine guns.

Protection.—Complete water-line belt, extending from stem to stern, 15.75 inches thick at the water-line amidships, tapering to 11.8 inches forward and aft, but with a uniform thickness of 9.8 inches at the lower edge throughout. Above this there is a coffer-dam belt, 4.7 inches thick, rising 4.8 feet above the main belt forward and 3.9 feet aft. The armor-deck above the belt is 2.8 to 3.1 inches, and all openings are surrounded by glacis plates. The two principal turrets are 17.7 inches thick on the front, 15.75 inches on the rear, and are of oval shape, balanced. The small turrets have 3.94-inch armor. The armor is chiefly compound.

Motive-Power.—Engines, twin-screw, triple-expansion, of about 14,000 I. H. P., designed to give a speed of 17.5 knots; and the boilers are of the Belleville water-tube type. The total coal capacity was designed to be 800 tons, but recent reports state that the bunkers will stow but 540 tons.

Dimensions.—Length of the water-line, 373.85 feet; length between perpendiculars, 360.9 feet; extreme beam, 67 feet; designed

draught aft at mean load, 26.25 feet; displacement at this draught, 10,978 metric tons.

TORPEDO-BOAT "No. 187": TRIAL.—This boat, which is 36 metres (118.1 feet) in length, and has a displacement of 79.5 tons, was built by Normand, of Havre. The mean speed attained on her recent trial was 25.73 knots, 2.73 knots above the requirements of the contract.

GERMANY.

"AEGIR": TURRETS, ETC.—It is reported that the fourth-class battleship "Aegir," 3600 tons, the last of the "Siegfried" class (for full description of all vessels of this class, see *Army and Navy Year-Book* for 1896, page 65) to be completed, is to have two turrets forward instead of an open barbette. The boilers will be of the water-tube type, eight in number, and will be arranged to burn liquid fuel.

TORPEDO-BOATS FOR AUXILIARY CRUISERS.—The auxiliary cruisers of the German navy, which include all the fast passenger steamers of the North German Lloyd and Hamburg-American lines, will, in time of war, each carry two third-class torpedo-boats of about 20 tons and sixteen torpedoes.

TRIPLE-SCREW PROPULSION.—It is said that the German Navy Department contemplates a more general adoption of the triple-screw system. As applied to the "Kaiserin Augusta," they were not altogether satisfactory, but it was a long while before the actual truth in regard to that vessel's trials became generally known. Her actual speed was only about 20.5 knots, though she was running very light, displacing but 5000 tons instead of 6050, her designed mean load displacement, or 6500, her ordinary displacement in service. A number of changes have been made in the arrangement of her machinery and exhaustive tests will be had.

EXPERIMENTS WITH LIQUID FUEL.—During the past year extensive experiments with liquid fluid have been carried out on board of the "Carola," "Siegfried," and some of the torpedo-boats, with such satisfactory results that both the new fourth-class battle-ships "Odin" and "Aegir," as well as the new cruisers, are to have their furnaces fitted for using the Masut fuel (Masut being the Russian name). The fuel is composed of various coal hydrates, which form the liquid heating material, the first element being the distilled product of Russian petroleum mixed with other oils. The ignition temperature of the oils being tolerably high (between 200° and 300° Centigrade), they can be stowed and handled on board ship without danger.—*Journal of the Royal United Service Institution.*

GREAT BRITAIN.

"DIANA," "JUNO": LAUNCH.—These protected cruisers, of 5600 tons, have been launched. They are similar in all respects to the

"Talbot," except that they have six inches more beam. The "Juno" was launched at the yard of the Naval Construction and Armament Company, Barrow, November 16, and the "Diana" at the yard of the Fairfield Company, Govan, December 5.

"JUPITER": LAUNCH.—This first-class battle-ship, of the "Magnificent" class (very fully described in the *Army and Navy Year-Book* for 1896, pages 73–75), was launched on November 18 at the yard of Messrs. J. & G. Thomson, Clydebank, near Glasgow. The mean load displacement is 14,900 tons, and she is similar in all respects to the other vessels of the class.

"THRASHER," "VIRAGO": LAUNCH.—These two first-class torpedo-boats, of the so-called "destroyer" or "Havock" class, have been launched at the yard of Messrs. Laird Brothers, Birkenhead, the former on November 5, and the latter on November 19. The conditions of the contract require a speed of 30 knots on trial. Two others, the "Quail" and "Sparrowhawk," were launched some weeks previous and are now nearing completion.

"ZEBRA": LAUNCH.—This first-class torpedo-boat, of the "Havock" class, was launched at the Thames Iron-Works, Blackwall, December 3. She is a sister-boat to the "Conflict," "Teazer," and "Wizard," building by Mr. J. S. White, of East Cowes, and like them is fitted with three White water-tubulous boilers. The total heating surface is 11,250 square feet, and the I. H. P. of the machinery is estimated at 4500. The engines are 4-cylinder, triple expansion, with 18-inch stroke, designed to make 380 revolutions when developing the maximum power.

"BLAKE": RECENT TRIALS.—This first-class armored cruiser of 9000 tons, when first completed, had great trouble with her boilers. On her trials the mean speed made over the measured mile was only 19.12 knots, instead of 22, for which she was designed; and the I. H. P. was only 14,535, instead of 20,000. The faulty character of the boilers is not wholly remediable; but after re-tubing and altering the back connection, and fitting ferules of Admiralty pattern on the furnace ends of the tubes, fairly good results have been attained. On November 6, 1895, the ship was taken out for a four hours' forced draft trial, and the results were: I. H. P., 19,579; steam pressure in boilers, 147 pounds; air-pressure, 2.3 inches; revolutions, 97.8; vacuum, 26.6; speed by patent log, 20 knots.

"LIGHTNING": TRIAL.—This first-class torpedo-boat, of the "Havock" class, built by the Palmer Ship-building Company, Jarrow-on-Tyne, has completed her acceptance trials, averaging 27.944 knots on a three-hour trial. Like her sisters, the "Janus" and "Porcupine," built by the same company, she is fitted with Reed patent water-tubulous boilers, and the propellers are of aluminum bronze. The steam pressure on trial was 195 pounds and the mean revolutions 368.

During her evolutionary trials, which followed those for speed, the time from full speed ahead to full speed astern was found to be seven seconds. On her way back to the dock-yard she ran into a steamer, doing no great damage to the latter, but crushing in her own bows as far back as the collision bulkhead. It was found that the pumps were able to keep the water down, and she was proceeding on her way when she ran aground on the Maplin Sands, but was hauled off without further damage the next morning. She then managed to reach port without further accident. The dimensions of the "Lightning" are: length, 200 feet; beam, 19.75 feet; draught aft, 6.5 feet; displacement, 277 tons. The "Porcupine" has had a preliminary trial and will shortly undergo the official test.

HAYTI.

"CRETE-À-PIERROT": LAUNCH, DESCRIPTION.—This single-screw gun-vessel, designed by Sir E. J. Reed, was launched at the yard of the Earle Ship-building Company, Hull, November 7. The vessel has a raised poop and forecastle; the bow has a short ram and the stern is elliptic; the poop is long and has quarters for an admiral and superior officers, the other officers being quartered below. The masts are light, with fore-and-aft rig. The vessel is lighted throughout by electricity, and there is one search-light. A conning-tower is placed on the after end of the forecastle, but is only machine-gun proof. The armament consists of one 16-centimetre (6.3-inch) S. R. F. G. on the forecastle; one 12-centimetre (4.7-inch) R. F. G. on the poop; four 10-centimetre (3.9-inch) R. F. G. in broadside sponsons; and two Maxim and four Nordenfeldt machine guns on the forecastle and bridges and in the gangways. The engines are vertical, triple-expansion, capable of driving the ship at high speed. The displacement is 1000 tons.

ITALY.

"AGORDAT," "COATIT": TO BE LAID DOWN, DIMENSIONS, ETC.—The Italians are about to perpetuate the memory of two of their victories in Africa—Agordat and Coatit—by giving these names to two torpedo-vessels of the "Partenope" or "Caprera" type, but larger and swifter, which are about to be laid down at Castellamare. The dimensions are: length, 287.4 feet; beam, 30.5 feet; draught aft, 10.9 feet; displacement, 1313 metric tons. A light protective deck is fitted, and the side is additionally protected throughout the length by plates 0.4 inch thick laid over the regular plating. The inclined part of the protective deck above the machinery spaces is covered by coffer-dams to be filled with coal.

"SICILIA": PRELIMINARY TRIALS.—The new first-class battleship "Sicilia," a sister ship in design to the "Umberto I." and "Sar-

degna," has had preliminary trials at Spezia. During a six hours' run under natural draft, with the engines making ninety-six revolutions a minute and developing from 14,100 to 16,900 I. H. P., the high mean speed of 19.2 knots was maintained. As this was only a preliminary trial, it is hoped that on the official one a speed of over 20 knots will be reached. During a preliminary forced draft run the engines developed 20,000 I. H. P., but the heat in the fire-rooms was so excessive that, unless means can be found to modify it, it is unlikely that, except on an emergency, recourse will be had to forced draft.

RUSSIA.

Russia is very active in naval matters just at present. Not only are several new vessels being commenced, but the construction of those already in hand is being actively pushed. It is evidently thought that foreign complications, in which she might be involved, may arise during the winter, for all the available ships in the Baltic fleet have been ordered to Revel to prevent their being shut in by the ice. At Sevastopol, according to the St. Petersburg correspondent of the London *Times*, all hands are busy, and the Black Sea Squadron, consisting of the battle-ships "Ekaterina II.," "Tchesma," "Sinope," and "Dvenadsat Apostoloff," with the "Bugg," "Donetz," "Kubanetz," "Pamyat Mercurya," and nine torpedo-boats, lies ready for sea. Ordinarily these vessels are placed out of commission during the winter. It is also stated that a committee has been formed to devise means of accelerating the rate of building vessels in Russia.

"OSLIABYA," "PERESVIET": KEELS LAID.—The official ceremony of declaring the keels laid took place on November 21. The "Osliabya" is building at the New Admiralty Yard and the "Peresviet" at the Baltic Works. These vessels were described in the February number of the UNITED SERVICE, page 181.

"KHRABRY": LAUNCH, DESCRIPTION.—This armored gun-vessel was launched at the New Admiralty Yard, St. Petersburg, November 21. The official ceremony of declaring the keel laid took place on June 1, 1895, but the actual laying of the keel occurred some weeks, at least, previous (probably about a year ago). The "Khrabry" is a sister ship to the "Otvajnii," recently completed, and also to the "Gremiaschii" and "Grosiaschii," completed previously. The bulwarks, or upper-deck rail, extend forward to the large deck-house containing the 9-inch gun, and aft to the deck-house just forward of the 6-inch gun. Two light masts and one smoke-pipe are fitted. The bow is of pronounced ram-shape. The principal details are as follows:

Armament.—One 9-inch B. L. R. in the forward deck-house with a rather small angle of train on each side of the keel; a 6-inch S. R. F. G. on deck aft with greater arc of train; eight small R. F. G. and machine guns; and two torpedo-tubes, one in the stem and one in the stern.

Protection.—Water-line belt extending around the stern and to within about thirty feet of the stem. Amidships, in wake of the boilers and machinery, the belt is 5 inches thick, tapering to 3.5 inches at the stern and 4 inches at the forward end. A transverse bulkhead, 3.5 inches thick, joins the forward ends of the belt. Armor deck over belt, 1 to 1.5 inches. Coffer-dam above belt for cellulose or other water-excluding material.

Dimensions.—Length on load water-line, 223.5 feet; beam, 41.6 feet; draught, 11 feet; displacement, 1492 tons.

Motive-Power.—Triple-expansion, twin-screw engines designed to develop about 2500 I. H. P. and give a speed of 15 knots. Water-tubulous boilers. Coal capacity, 130 tons.

SPAIN.

It is reported that the Spanish government has decided to build a cruiser and two 28-knot, first-class torpedo-boats of the "destroyer" type, to replace the "Reina Regente," "Cristobal Colon," and "Sanchez Barcaistegui;" and they will bear the names of the vessels they replace. It is also said that a small cruiser, built at Kiel for the Chinese government, but not delivered, has been sold to Spain. It is in contemplation to send the old broadside battle-ships "Vitoria" and "Numancia" to La Seyne to be transformed into armored cruisers. The alterations will include new engines and boilers, a new battery, and such other changes as may be found necessary. The "Numancia" is the first armored ship sent to the Pacific and China, and is said to be the only one which has gone round the world. Six steamers of the Spanish Transatlantic Company are being armed and will be sent to Cuba to patrol the coast and prevent the landing of filibustering expeditions or of supplies for the revolutionists. Orders have been given that the protected cruiser "Alfonso XIII.," 4826 tons, of the "Reina Regente" type, under construction at Ferrol, is to be completed as quickly as possible, and an effort will be made to hasten the other work in hand. The arsenals of Carraca and Ferrol are to be connected by railway to facilitate the transport of material; and it is proposed that a naval officer of rank should be sent to inspect dock-yards in England and France to see what improvements can be made in Spanish yards.

"Dona Maria de Molina," "Marques de la Vitoria," "Don Alvaro de Bazan."—These torpedo vessels, of the "Filipinas" type, have been ordered. The displacement is to be 830 tons and the speed 20 knots. The battery will consist of two 4.7-inch R. F. G., four 42-millimetre (1.65-inch) R. F. G., two machine guns, and four field and boat guns.

"Almirante Oquendo": Steam Trials, Description.—This armored cruiser, of 6890 tons, is the last to be completed of the three

sister ships built at the Astilleros del Nervion, Balbao, the others being the "Infanta Maria Teresa," and the "Viscaya." The principal part of the trials, which took place on August 26, 1895, consisted of six hours' steaming under full speed with natural draft, the speed being obtained from a curve of revolutions determined by eight runs over the measured mile, four before and four after the six hours' trial. The mean results for the six hours were: revolutions, 105; I. H. P., about 9000; speed, 18.49 knots. Subsequently a run of about an hour was made with forced draft, the speed attained being 20.3 knots, I. H. P. 13,000, revolutions 117.

The principal characteristics of the "Oquendo" are:

Armament.—Two 28-centimetre (11-inch) B. L., one forward and one aft, mounted in barbette towers; ten 14-centimetre (5.5-inch) S. R. F. G. in broadside on main deck, forward and after pairs in sponsons; two 2.75-inch R. F. G.; eight 6-pounders, two 11-millimetre machine guns; eight Hotchkiss R. C., and eight torpedo-tubes.

Protection.—An armor belt 12 inches thick, 5.5 feet broad, and extending for a length of 315 feet amidships and having a backing of teak 6 inches thick; a complete protective deck, 2 inches thick on the flat and 3 inches on the slopes. The barbette towers, which are within the extremities of the belt, have armor 10 inches thick, and the ammunition tubes, above the protective deck, are protected by 8-inch armor. Coal-bunkers are arranged in wake of boilers and machinery. The vessel has a double bottom and 11 transverse bulkheads.

Motive-Power.—Two sets of vertical, triple-expansion engines driving twin-screws; four double-ended and two single-ended boilers; two boilers for auxiliary purposes. Coal capacity, 1000 tons.

Dimensions.—Length between perpendiculars, 340 feet; greatest beam, 65.2 feet; mean draught at normal displacement, 21.5 feet; displacement at this draught, 6890 tons.

UNITED STATES.

"KEARSARGE," "KENTUCKY": BIDS, CONTRACT AWARDED.—Bids were received from three firms, two of which, the Cramps and the Union Iron-Works, bid upon government designs and plans prepared by themselves, and one—the Newport News Company—bid only on the government designs. Proposals for the construction of the battleships under the latter designs were announced as follows: The William Cramp & Sons Ship- and Engine-building Company—For one, $2,820,000; for two, each, $2,750,000. Union Iron-Works—For one, $2,740,000; for two, each, $2,690,000. Newport News Shipbuilding and Dry Dock Company—For one, $2,350,000; for two, each, $2,250,000. Under Class 2—bids on private plans—the Cramps

submitted three bids. The first proposal, designated as "A," proposed to build one of the vessels for $2,500,000, or two for $2,450,000 each. The proposal designated as "B" proposed to build three ships for $8,000,000, two of which were to be fitted with armor. Proposal "C" proposed to construct the two ships for $3,850,000 each, to be supplied with armor and gun protection. The Union Iron-Works made only one proposal under Class 2. That was to build one ship for $2,650,000, or two ships for $2,640,000 each. In a paper included in proposal "B" of Cramps' bid they say, "We propose in Class 2 to build three battle-ships to fulfill the conditions set forth in the advertisement of the Navy Department as for battle-ships Nos. 5 and 6. Our plans involve the hull and machinery of the 'Indiana,' with modifications of the arrangement or armor and disposition of armament as shown in the accompanying drawings and table. These several modifications constitute six schemes involving various thicknesses and extents of armor and gun protection, and distinct plans for arrangement of armament. Our price for the ships will be the same no matter which of the several schemes may be adopted. The model will be the same as the 'Indiana's' in all respects except as to the form of the stem, which difference is indicated by the drawings. The specifications will be the same as those of the 'Indiana,' modified only in such details as may be necessary to suit the requirements of the varying arrangements of armor and the different dispositions of armament. The engines in all respects will be duplicates of the 'Indiana's.'"

In the accompanying sheet the "Indiana" appears as the first scheme for the purposes of comparison only. Scheme 2 is for a modified "Indiana" turret-ship. Water-line belt, 14-inch Harveyized armor, extending 195 feet. Casemate, 4-inch, extending 160 feet. Main (12-inch gun) barbettes, 12 inches; turrets, 12 inches; 8-inch gun barbettes, 8 inches; turrets, 6 inches; 6-inch or 5-inch gun sponsons, 4 inches. Conning-tower, 8 inches. Protective deck, 3 inches and $2\frac{3}{4}$ inches. Normal coal supply, 600 tons. Draught, normal, 23 feet 6 inches. Full coal capacity, 1640 tons (200 tons more can be stowed). Draught, with 1640 tons, 25 feet 6 inches. Corresponding displacement, 10,990 tons. Battery—Four 12-inch, eight 8-inch (in turrets), six 4-inch (rapid-fire, in sponsons), twenty 6-pounders, six 1-pounders, two Gatlings, six torpedo-tubes (or four if preferred). In Scheme 3 the armor extends the whole length of the ship, tapering from 14-inch amidships to 4-inch at ends. Protective deck, 3-inch. Normal coal supply, 400 tons M. Normal draught, 23 feet 6 inches; with 1640 tons, 25 feet 6 inches; displacement, 10,990 tons. Scheme 4—To carry four 13-inch guns in pairs mounted in barbettes with shield turrets 6 inches thick. Other gun protection and all hull protection same as No. 3, except that the 8-inch gun shield turrets are 5 inches thick. Battery same as No. 2, excepting 13-inch guns instead of 12-inch. In Scheme 5 the normal

coal supply is 800 tons; normal draught, 23 feet; at 1640 tons, 24 feet 8 inches; corresponding displacement, 10,540 tons. Battery same as No. 4, excepting two 13-inch guns instead of four. Scheme 6—Same arrangement of armor and disposition of battery as in No. 5, except that eight 10-inch guns are in four barbettes with shield turrets instead of eight 8-inch guns, as in No. 5. Normal coal supply, 577 tons; normal draught, 23 feet 6 inches; with 1640 tons of coal, 25 feet 6 inches; corresponding displacement, 11,013 tons. Scheme 7—Hull protection and main barbettes same as No. 5. Main, or 13-inch gun, turrets, 15 inches thick; 8-inch turrets (superposed upon 13-inch turrets), 7 inches thick; normal coal supply, 400 tons; normal draught, 23 feet 6 inches; draught with 1640 tons coal, 25 feet 11 inches; corresponding displacement, 11,190 tons. Armament—Four 13-inch, four 8-inch, twelve 5-inch rapid-fire guns. Secondary battery same as preceding schemes. All the armor embraced in the foregoing schemes to be Harveyized.

The main feature of the design submitted by the Union Iron-Works relates to the double turrets. Under the government's plans the 8-inch turrets, superposed on the 13-inch turrets, are fixed to the latter. The Union Iron-Works' plans make them independent, and they can revolve in any direction without the aid of the 13-inch turrets. This is accomplished by means of the usual revolving arrangement for turrets, which is placed in between the two 13-inch guns in the larger turrets. It is said that there is little increase of weight by this plan and that it promises good results.—*Army and Navy Journal.*

The contract was awarded to the Newport News Company at their bid of $4,500,000 for two ships, or $2,250,000 each. When we consider that the contract price for the "Indiana" was $3,020,000, and for the "Iowa" $3,010,000, and that the "Kearsarge" and "Kentucky" are larger ships than either, the decreased cost of construction appears remarkable; indeed, the prices are as low as, if not lower than, would be paid in England for the same work.

"Texas": Trial.—The second-class battle-ship "Texas," 6315 tons, had her steam trial off Sandy Hook, December 19, 1895. The full report is not yet available, but the following unofficial data are given by the newspapers: mean I. H. P., 8900; revolutions, 126; steam-pressure, 143 pounds; air-pressure in ash-pits, 1.8 inches; speed, 17.82 knots. Owing to an accident in docking, the "Texas" has been put out of commission for repairs, and certain minor alterations will be made in various fittings. A full report of the trial and a description of the ship will be given later.

Condition of Vessels building.—The Bureau of Construction and Repair gives the following as the percentage of completion of the vessels below, given up to December 1: "Indiana," 100; "Massachusetts," 95; "Brooklyn," 64; "Iowa," 50; "Nashville," 69;

"Wilmington," 69; "Helena," 68; "Oregon," 94½; "Monadnock," 97; "Puritan," 91; "Terror," 97½; "Unadilla," 95.—*Army and Navy Journal.*

HEAVY GUNS.

REPORT OF THE BOARD ON THE BREECH-PLUG OF THE "COLUMBIA'S" 8-INCH GUN.—Captain Sampson, chief of the Naval Bureau of Ordnance, has approved the report of the board, consisting of Lieutenants John H. Moore, W. L. Rodgers, and Professor P. R. Alger, which investigated the accident to the breech-plug of the 8-inch gun on board the "Columbia." The board has conducted numerous experiments at Indian Head and has recommended that less metal be cut out of the centre of the plug and that the rack be cut on the plug instead of on a separate piece of metal. New plugs will be made for all guns of 8-inch calibre and upward which are supplied with the old type of plug.—*Army and Navy Journal.*

PNEUMATIC GUNS: TESTS.—The board testing the pneumatic dynamite guns at San Francisco, December 9, telegraphed to General Flagler that the battery had more than fulfilled all requirements. On the second day each gun threw five 15-inch dummy projectiles for rapidity, making an average of 8½ minutes for the five. Then three sub-calibre 8-inch shells were thrown for range to a distance of 1500, 2000, and 2500 yards successively, and one, carrying 100 pounds of dynamite, was thrown upon the rocks two miles across the bay. The tests for accuracy were also satisfactory. A 15-inch shell, carrying 500 pounds of dynamite, was fired into the mountain, tearing an enormous hole in the rocks, and three similar shells were fired out to sea, exploding exactly as calculated below the surface.—*Army and Navy Journal.*

GUNS FOR COAST DEFENSES, ETC.—The Army Chief of Ordnance, in his annual report, tells us that the Crozier 10-inch wire-wound gun has been fired 210 rounds and is still in good condition. Three other wire-wound guns manufactured by the department have been tested. Two have failed and one is under trial. The 5-inch Brown segmental gun shows good endurance. The Crozier gun has shown that guns on this principle have sufficient endurance and stability. Yet, in the judgment of General Flagler, it has no valuable advantage over the built-up, hooped gun of the service type and has less structural stiffness. The question of comparative cost is not yet determined. To decide it, an appropriation is asked for a limited number of this type. General Flagler presents his reasons for asking for an appropriation for a type 16-inch gun. There is no analogy, he argues, between the use of such a gun by the army and its use by the navy. The naval gun is limited as to weight and length and, being mounted

on a movable support, can be placed in a position which will give the best results. The army gun is on a fixed platform and must fight an enemy who chooses his own position. Navy objections to the 16-inch gun do not, therefore, apply to its use by the army. Other powers use this or a larger gun for coast defense. A 12-inch gun can no longer penetrate modern armor. It will require three years to complete a type gun. John Ericsson, who had made as thorough a study of guns as any man living, thirty-three years ago, May 19, 1862, said, speaking of the increasing calibre of guns: "Whatever the size may be, there let us stop and then go for the highest initial velocity. The proposed 16-inch shot will, in my opinion, be found very near the true size for producing maximum effect." General Flagler certainly should have an appropriation for his type gun. General Flagler reports that the 12-inch B. L. steel mortar has stood 335 rounds without injury, and 180 rounds with pressures from 31,000 to 37,000 pounds. It shows but little erosion and can be fired an indefinite number of additional rounds. The gas check, with which there was at first some trouble, is now nearly perfect. The difficulties with the breech mechanism have also been overcome. A graphic representation is given in the report to show its accuracy of fire, the deck of the United States ship "Philadelphia" being represented as the target. From one to four shots are represented as planted in it at eight ranges varying from 9285 yards to 11,859 yards. In a test for rapidity the mortar was fired in an average a little over two minutes for each shot. Satisfactory results were obtained with sixteen 12-inch mortars fired so nearly together as to simulate volley firing. The Grusorwerk 12-inch minimum-port casemate carriage has been recommended for acceptance, experimental tests having shown it to be efficient and adapted for use in the service. The Gordon disappearing carriage has defects, but can be used in some situations. The Gordon experimental 12-inch mortar carriage, with certain changes easily made, would have positive advantages over the service spring-return mortar carriage, and it will cost less. Experiments with 6-pounder and 4.7-inch quick-fire guns have been so satisfactory that the department is prepared to supply them for sea-coast defense as soon as emplacements are ready.—*Army and Navy Journal.*

TORPEDOES, TORPEDO-TUBES, ETC.

NEW 18-INCH HOWELL TORPEDO.—Recent trials of the new 18-inch Howell torpedo have proved very satisfactory, and 25 are ordered for the navy, subject to the usual acceptance tests.

ALUMINUM TORPEDO-TUBES.—As the result of a series of exhaustive trials of aluminum torpedo-tubes on the British torpedo-boat "Boxer," it has been found that there is so much erosion due to the

action of salt water and the powder-gases that the tubes can not be relied upon for endurance. Owing to lack of rigidity of the metal, the tube and fittings had to be stiffened by steel or brass, so that the saving in weight would have been comparatively slight, even had the apparatus proved successful.

SMALL ARMS.

THE NEW NAVY RIFLE: REMARKS.—A new form of rifling for the navy small-arm is to be experimented with by the Ordnance Bureau. This is done in the hope that the life of the arm may be extended. The barrel will be lightened by reducing the thickness of the walls of the chamber and bore, in addition to the length reduced from thirty to twenty-eight inches. The experts propose to substitute for the usual bar sight a rear sight, which will, with the larger danger zone obtained with the flat trajectory, do away altogether with the adjustable sight, except for sharp-shooting. Steel cleaning-rods cannot be used on the new navy gun, as they are apt to wear away the rifling at the muzzle very rapidly, and so destroy the accuracy of the piece. Those who handle this arm will be warned to clean the rifle as seldom as possible, using on such occasions a brass or wooden rod, or a leather thong, instead of a steel rod. It is proposed to use bands of steel considerably lighter than those usually employed, as no efficient means have been found for blacking aluminum, and it cannot be used for bands.—*Army and Navy Journal.*

RICCI GAS-TIGHT REVOLVER: DESCRIPTION.—In its latest shape this is an automatic arm. There is a short bolt, with an axial firing pin, concealed in the breech. This bolt enters the cylinder and pushes the cartridge to the front a short distance into the barrel, thus preventing the escape of gas. The main-spring, which is in the grip, is U-shaped; one leg (the shorter) operates the bolt and the other the firing pin. The bolt is driven to the rear by the force of the explosion, compressing the main-spring; when the bolt starts forward, the firing pin is held by a detent; the forward movement of the bolt actuates another lever which rotates the cylinder and presses a catch that locks it at the proper point. The bolt then enters the cylinder, presses home the cartridge, and the piece is ready for firing. Pulling the trigger releases the firing pin, which flies forward and strikes the primer.

NEW FORM OF PRACTICE CARTRIDGE.—The new small-bore rifles cannot be fitted for firing sub-calibre ammunition, so that, in order to furnish a cheap cartridge for instruction and target practice, the Practice Cartridge Syndicate, Limited (British), has brought out a new type. The brass shell is similar in all respects to the service cartridge, but instead of holding a bullet, the front end is crimped around a small

rim-fire cartridge with a short bullet and a small powder charge. The head of the small cartridge rests against a block supported by an inner tube in the large brass shell. Inside this tube there is a central rod which receives the blow of the firing pin of the gun and transmits it to the rim of the miniature cartridge.

GUNPOWDER AND EXPLOSIVES.

ROSSLYN SMOKELESS EXPLOSIVE.—This new smokeless explosive is the one we referred to in our October, 1895, issue as having been produced by Messrs. Hay, Merricks, & Co., Limited, of the Rosslyn Gunpowder Works, Scotland. Its peculiar characteristic consists in the fact that it is made up in the form of a woven or netted web of textile fabric, and not in the usual shape of grains or rods. In the preparation of the explosive, the web, either scoured and bleached or left untouched (though in the former case a more stable material is the result), is nitrated by any of the known methods, and washed until it stands the "heat test." It is then rendered suitable for use in fire-arms by the introduction of any or all of the following modifying agents in solution: Barium nitrate dissolved in water, sodium nitrate dissolved in water, potassium nitrate dissolved in water, ammonium nitrate dissolved in water, starch dissolved in water, nitro-glycerin alone, nitro-glycerin dissolved in any suitable solvent, paraffine or vaseline dissolved in benzine or in any other suitable solvent. After this process the solvents are dried out, and the finished explosive is left in the form of a nitrated cloth, containing the substances referred to above, partly within its cellular structure, and partly within its netted interstices. Its condition in this finished state is one that lends itself for cutting into pieces or strips varying in size and weight according to the explosive effect desired. Patent accepted September 28, 1895.—*Arms and Explosives.*

NEW SMOKELESS POWDER.—The International Powder Company (American) has brought out a new powder. The patent specifications state that it is composed of nitro-glycerin, trinitrocellulose, a nitrate neutralizer of free acid, and a deterrent such as vaseline or a resin; the proportion of nitrate to the trinitrocellulose being about forty-five parts of nitrate to one hundred of cellulose. The use of the fossilized gum Kauri is also claimed.

NEW RUSSIAN SMOKELESS POWDER.—*The Journal de la Marine Russe* for this year contains an account of the new Russian smokeless powder, of which the base is pyrocollodion. It is a consequence, the *Globe* reports, of the researches of M. Mendeleeff, who went to France and England to study the processes of making smokeless powder in the laboratories of M. Berthelot and Sir Frederic Abel. A laboratory

was attached to the Ministry of Marine in Russia, and there M. Mendeleeff and others discovered pyrocollodion and the new powder, which, it is stated, has proved very successful in experiments with guns of large calibre.—*London Engineer.*

NORMAL POWDER: TRIALS.—Recent results with this powder have been very satisfactory, and the Normal Powder Syndicate, Limited, is so confident of its good qualities that it has offered the British government to pay all expenses of a competitive trial of all the best powders in England in order to determine which is most suitable for use in the Lee-Metford rifle; but the War Office declined the offer. In trials made by and published in the *Field*, 32 grains of Normal powder, with the service bullet of 215 grains, gave a velocity of 2054 f. s., with extreme differences of 55 f. s.; the mean pressure was 15.98 tons, extreme difference 3 tons. The moisture, heating, and keeping tests were very satisfactory. Other tests, made by the Syndicate, gave:

Rounds.	Charge. (Grains.)	Mean Velocity. f. s.	Extreme Differences. f. s.	Mean Pressures. f. t.	Extreme Differences. f. t.
10	31	2008	16	14.7	0.8
10	31.5	2149	30	16.6	0.4

PROJECTILES.

EXPERIMENTS WITH SEMI-ARMOR-PIERCING SHELL.—The Naval Bureau of Ordnance has received a report from the Indian Head Proving Ground giving the results of experiments with semi-armor-piercing shell fired against Harveyized plate. These were the first experiments with shells of this character against any but oil-tempered plates. The shells were 4 and 5 inches in calibre; the plate was 3 inches in thickness, and was the ballistic plate which represented the group of armor for the side of the cruiser "Brooklyn." In the first round, a 4-inch shell was fired with a velocity of 1700 f. s. It broke up on the face of the plate, three pieces of the face, together with the base plug falling on the ground in front of the plate. The diameter of the hole in the face of the plate was 8.5 inches. In round 2 the 4-inch shell was given a velocity of 1815 feet per second. The base of the projectile was broken in three pieces, which, with the base plug, were found on the ground in front of the plate. The remainder of the projectile, with the back bulge of the plate caused by the impact, was driven into the backing. Diameter of hole in the plate, 7⅛ inches. No portion of the projectile got through the backing. Two attempts were made to burst 4-inch shells charged with 0.75 pound of powder in an explosion chamber, but neither was successful. A 5-inch shell was fired against the "Brooklyn" plate with a velocity of 1694 feet per second. The projectile broke up. Some portions of the projectile got

into the backing. The diameter of the hole in the face of the plate was 7½ inches. The plate was cracked for 6 inches from the impact. A 5-inch shell loaded with 2.25 pounds of powder was exploded in the explosive chamber and broke into thirty-six fragments.—*Army and Navy Journal.*

ARMOR-PIERCING SHELL WITH SOFT CAP.—Mr. A. Reynolds, of Sheffield, England, has taken out a patent for "Providing armor-piercing projectiles with a soft nose by electrically depositing on the point a cap of copper, iron, or suitable alloy, preferably burnishing the metal as it is deposited, according to what is known as the Elmore process. The cap may afterwards be turned to a symmetrical form." The patent also provides for fastening on previously formed caps by depositing a film of metal at the line of contact between the two parts, and also for fitting the rotating bands by electrically building them up. Mr. E. M. Johnson (U. S.) has also taken out a patent for capped projectiles, but a full description of the special features of the patent has not come to hand.

ARMOR.

COMPETITIVE TEST OF AMERICAN AND FRENCH ARMOR IN RUSSIA.—A French armor plate, and a Carnegie plate, made by a patent process of nickel steel, reforged and Harveyed, were recently under trial at St. Petersburg. Both plates proved to be of the highest strength. Of the two, however, the American proved the most resisting, the French plate being finally smashed into four pieces, while the American broke only into three.—*Army and Navy Gazette.*

As a result of this test, the Russian government placed a contract with the Carnegie Company for a large amount of armor. The contract will be filled with as little delay as possible, and it is expected that it will occupy the works for five months.

TEST OF AMERICAN ARMOR IN RUSSIA.—President Linderman, of the Bethlehem Iron Company, on December 6, received a cablegram from Lieutenant Meigs, at St. Petersburg, giving particulars of a severe ballistic test of side armor-plate (made at Bethlehem) for the Czar's new battle-ship "Sevastopol." The penetrations were very slight, and there were no cracks. The test resulted in the acceptance of 550 tons of armor.—*Army and Navy Journal.*

REPORT OF BOARD ON CHANGES IN FITTING ARMOR.—The board, consisting of Naval Constructors Stahl and Capps, and Professor Alger, appointed to report upon improvements in the method of fitting armor plate to backing, is expected to make its report in a few days. Professsor Alger went to Norfolk a few days ago and had a conference with Naval Constructor Stahl, and the report is now practically completed. The changes to be recommended will be minor, with the ex-

ception of the bolt, which will be smaller and more advantageous than the type now in use.—*Army and Navy Journal.*

TEST OF A 0.625-INCH FACE-HARDENED PLATE.—The Navy Department has received reports from Ensign Williams and Lieutenant N. E. Mason of a test of a Carnegie thin shield plate $\frac{5}{8}$ of an inch in thickness and face hardened. The width of the plate was 34 inches and its length 48 inches. The plate was fired at fourteen times with 1-pounder projectiles. Lieutenant Mason sums up the results: "This plate when inclined at an angle of 40 degrees will keep out 1-pounder piercing projectiles fired with a muzzle velocity of 1750 feet per second, at ranges greater than 105 yards, when the impacts are above the supports, and at ranges greater than 240 yards when the impacts are between or near the supports. When the line of fire is normal to the surface of the plate, it will keep out the same projectile at ranges greater than 1975 yards." Ordnance experts regard the results obtained from the plate as excellent. They are waiting for the test of the Bethlehem thin steel plate, which will be made shortly. When this test is completed, Captain Sampson, chief of the Bureau of Ordnance, will adopt the plate giving the best results as the type to be used in the naval service.—*Army and Navy Journal.*

SERVICE SALAD.

Plucky "Tom" Stevens.

(*From the New York Tribune.*)

AN INTERESTING STORY ABOUT LIEUTENANT T. H. STEVENS, OF THE NAVY.

An Italian gentleman was relating recently an interesting story in which Lieutenant "Tom" Stevens figured as the hero. It is not surprising to hear of gallant conduct from this officer, the son of Admiral Stevens, "Fighting Tom," who has the reputation of having been one of the bravest officers of the Civil War. The finest point about the story was that it has never been exploited in Washington, where Lieutenant Stevens makes his home. It is characteristic of him not to have mentioned it even to his most intimate friends, many of whom will doubtless read it here for the first time.

"Via Reggio, as you know," said the Italian, "is a sort of Italian Narragansett. The cafés are directly on the water's edge, and in the afternoons their verandas are crowded with fashionable people, who sip their coffee and liquor in the open air. Early in the seventies—about 1874, I think—I, with a party of friends, sat on the veranda looking out to seaward, when our attention was attracted by two swimmers, far out in the water, who were evidently past masters of the art of swimming, and who excited the admiration and interest of every one on the pier.

"At last, having had sport enough, they struck out for shore. The foremost one,—who, I afterwards learned, was Lieutenant Stevens, of the United States navy, on leave of absence from his ship, which lay in the Bay of Naples,—to our surprise and alarm, when he passed the jetty in front of the Casino, turned and swam to the east of it. Now, on this jetty was posted a warning not to go to the eastward, and this venturesome young officer had read the warning; but, as he afterwards admitted, was curious to see what the danger was. We who knew the secret of the place and how many brave fellows had lost their lives at this treacherous point, watched him with keen anxiety swim quite around the pier, and then turn to go back. Suddenly he realized that he was not gaining on the pier, and an exclamation of admiration went up from every one when, the moment he felt he was being carried out to sea, he struck out with almost superhuman vigor. I have, surely, never had my admiration more excited than by the splendid sight of that man battling with the waves. And it was admiration not for the swimmer alone, but for the will and energy and courage of the man. He gained gradually, making slow progress; but after a few intense moments he was out of danger, and a sigh of relief went up from us all.

"In the mean time his companion, who had been swimming leisurely about, and who, it seems, had not seen his friend's danger, started to swim to the east of the pier. Mr. Stevens called to him not to attempt it, but, unheeding his friend's warning, he swam on over the same course Mr. Stevens had taken. He seemed to be making good progress on his way back, when a sudden cry of distress announced his danger. Mr. Stevens, by this time near to land, but completely exhausted from the tremendous effort he had made, called to those on the veranda to send immediate help. Of course, no one of us for a moment thought that he would attempt a rescue, but without

waiting an instant, without waiting even to recover his breath, he plunged back into the breakers, and in a moment more was at his friend's side, who rewarded his kindness by gripping him about the body and dragging him under the water. They came up again. Somehow young Stevens, who had managed to extricate himself, placed an arm under his companion, a man of large frame and stout build, and floated him until he recovered himself. We could see them distinctly from the Casino. Stevens seemed to reassure and encourage his friend, and they struck out for the shore together.

"The way to the shore was a long and hard one, but they persevered, and for a second time Stevens was out of danger, this time with his companion. How, in his exhausted condition, this brave Stevens contrived to tow his half-drowned friend to shore we never understood, although we watched the struggle intently and wondered at the grit and intrepidity of the man who had so nobly risked his life. They were considerably disgusted on their way out to meet the professional bathers, who asked if they could point out the place where the two men were drowning.

"I cannot make you understand the danger young Stevens ran in going back for his companion; but without exception it was one of the most gallant acts I have ever witnessed."

Supplying our Armies.

(*From the New York Sun.*)

MACHINERY BY WHICH THE CIVIL WAR WAS CARRIED ON.

Captain Sharpe's Account of the Work of furnishing Supplies to the Northern Armies and the Vast Resorces needed.

THE grand strategy of the war has been pretty well thrashed over; reputations have been made and unmade—on paper. But while the reasons for this and for that move by General Brown or General Jones or General Robinson have been hashed and rehashed, comparatively little has been said about the machinery by which the armies of these generals were maintained. An editorial in the *Sun* the other day commented on Captain Sharpe's prize essay "Supplying Armies in the Field," and quoted some of the facts therein set forth; but so little is known generally of the subject that further quotations ought to prove interesting.

In the first place it might be well to know about Captain Henry G. Sharpe. He is a commissary of subsistence in the army, is a young man, having been graduated from West Point so recently as 1880, and he is the author of a book "The Art of subsisting Armies in War," which might be studied without any detriment to their usefulness by the commissaries of the National Guard. Each year the Military Service Institute offers a prize for the best essay on some military subject, and the prize offered in 1895 has been carried away by Captain Sharpe.

The men in the armies came from everywhere; but how were they fed, how clothed and shod? Where did the guns come from, where the bullets that were fired so profusely, where the powder? Captain Sharpe answers these questions.

The Quartermaster's and Commissary's Departments had their principal points of supply in Boston, New York, Philadelphia, Baltimore, Washington, Cincinnati, Louisville, St. Louis, Chicago, New Orleans, and San Francisco. At each of these cities were depots with officers, clerks, laborers, and mechanics in ample numbers, who did nothing but take in and forward supplies. The staff of life was baked principally in New York, Baltimore, and St. Louis, but the government built and operated its own ovens at Cincinnati, Louisville, Jeffersonville, and Alexandria, and at Louisville it ran a number of pork-packing establishments. The uniforms for the men came principally from New York, Philadelphia, Boston, Louisville, Cincinnati, Indianapolis, St. Louis, Detroit, and Springfield, Illinois. In small towns even to this day one will come across tailors who advertise in military papers that they have made uniforms for thirty-five years; they started when the government was fitting out its thousands of men and still make a few uniforms each year.

There were twenty-eight foundries and armories in the North from which the ordnance supplies came. Fort Monroe

turned out iron gun-carriages and so did South Boston; Watertown, Massachusetts, Watervliet, Alleghany, and Washington provided wooden gun-carriages, and Watertown and Watervliet produced harness. The Springfield armory made many rifles; private firms made others, and all the arsenals except Fort Monroe produced ammunition.

The horses and mules were purchased by the Quartermaster's Department, which maintained remount depots at Gisboro, D. C., St. Louis, Greenville, Louisiana, Nashville, Harrisburg, and Wilmington. At Gisboro the depot occupied 625 acres, and had room for 30,000 horses at a time. The cavalry bureau of the Quartermaster's Department handled 500 fresh horses a day in 1864, and it sent 150 a day to Sheridan in his Shenandoah campaign. Louisville was the site of the chief corral for beef cattle. That corral could hold about 35,000 head. Canned meats were not common in those days, so that the beef had to be served almost on the hoof.

Philadelphia was the chief depot for the supplies of the medical department. Captain Sharpe notes that at the end of the war the government had more than 200 general military hospitals, with 136,984 beds, an average of nearly 700 beds to the hospital.

The Confederate States made their cannon at Richmond; they built small-arms factories at Memphis, Nashville, Gallatin, and Richmond, and made their powder at Dahlonega, and their cartridges at Grenada, Mississippi.

To get all the supplies to the armies in the field the government used railroads, steam and sailing vessels, and wagons and pack animals. On February 11, 1862, a military superintendent of railroads was appointed, Brigadier-General D. C. McCullum. Before the war ended he operated 1769 miles of railroad, with 10,000 men forming a construction corps, and a rolling-mill at Chattanooga for rerolling the rails twisted by the various armies as they destroyed the railroads. The longest single road operated by General McCullum was the Richmond and Danville, from Manchester to Danville, 140 miles.

On March 17, 1862, the transportation of the Army of the Potomac to Fort Monroe was begun. There were 125,000 men, 14,592 animals, 44 batteries, with wagons, ambulances, pontoon trains, etc. Four hundred steamers and sailing vessels were used. This statement gives an idea of the enormous requirements of the government in the way of water transportation. In a note Captain Sharpe says that there were 119 steamers, 305 barges, and 109 coal and railroad floats belonging to the government on the Mississippi and its tributaries and at Mobile, besides 1750 steamers and other vessels chartered by the Quartermaster's Department, to be used on the Mississippi. Besides these there were vessels on the coast; and in passing it is interesting to note that the navy consisted of nearly 700 vessels, not one of which is included in the foregoing statement.

The wagon-trains of the armies, though diminished in each such successive campaign, were of enormous proportions. On July 1, 1862, the Army of the Potomac had 80,000 men, 3100 wagons, 350 ambulances, and 25,000 horses and mules; 40 wagons to each 1000 men. When Sherman's army left Atlanta it consisted of 63,680 men, 14,768 horses, 19,410 mules, 2520 wagons, and 440 ambulances; 40 wagons to each 1000 men. At one time the Army of the Potomac got its train down to 22 wagons and 239 draught animals for each 1000 men.

In Captain Sharpe's book is an interesting calculation of the number of six-horse wagons necessary to supply an army of 100,000 men. A wagon will supply 500 men for one day. If the army is one day from its base the wagon must go back empty to refill, so it can supply only 250 men. If the army is two days' march from its base four wagons are needed for each 500 men, or 800 for 100,000 men. But, counting in 16,000 cavalry and artillery horses, 200 wagons will be needed for a day's forage, or 800 if the army is two days from its base; so 1600 wagons, with 9600 horses will be needed. But these must be fed, and would need 360 wagons, with 2160 horses; and these would need 92 wagons, with 552 horses; and so on, until it is found that 2000 wagons and 12,000 horses are needed to supply 100,000 men two days from their

base. So the number piles up, until we find that to supply 100,000 men ten days' march from their base, 10,975 wagons, with 65,850 horses are required. These wagons, if they could keep their interval on the march, would take up 108 miles in single file.

The civil war of 1861–65 was one of the greatest wars of history. Its armies were great, its battles were great; but not the least element in its greatness was the preparation made to carry it to a close.

Couldn't take New York.

(From the New York Sun.)

THE METROPOLIS HAS LITTLE TO FEAR FROM FOREIGN FLEETS.

What the Engineer Officers say about the Possible Destruction of Life and Property Here in Case of Bombardment—The Port's Defenses considered Adequate.

SINCE the publication of President Cleveland's Venezuelan message and the storm of war talk then started the Army Building, at the corner of Whitehall and Pearl Streets, has been visited by numerous New Yorkers, anxious to learn the fate of the metropolis should a British fleet appear in the harbor and begin dropping shot and shell into New York and Brooklyn. People with money in safe deposit vaults have called to ask if it would be advisable to move their valuables up to Yonkers, or some town out of reach of the guns of British men-of-war. One builder, who recently began the erection of a block of houses in Eighty-fourth Street, near West End Avenue, called to find out if it would be perfectly safe to go on with the work.

The officers of the Ordnance Department referred all inquirers to the engineers, and the engineers have been unable to do much else during the past two or three weeks than allay the fears of those who might suffer loss by a possible bombardment. When there has been a lull in the inquiries the officers of the engineers have found much satisfaction in saying things about the ordnance officers who turned the multitude of inquirers over to the men whose business it is to wrestle with figures and plan harbor and coast defenses.

A *Sun* reporter took his way to the Army Building a day or two ago. The questions he had to ask were inspired not so much by anxiety as by a curiosity to know whether Printing House Square might calmly, and with safety, receive and give out news in the event of a bombardment, or whether the square had better move up town and get its news by wire from the Battery. The reporter followed the procession, and in due time found himself in the private office of an officer of engineers, to whom he explained who he was and his business.

"There won't be any bombardment," the officer said; "and if there was, we needn't any of us worry much about it."

Then he proceeded to make a very guarded statement about the distance the ships of a foreign power would have to be from the city in order that their guns might do damage to its property. "In the first place," said the officer, "it must be borne in mind that the distance a gun will carry depends upon the elevation of the gun. No naval commander has ever considered it safe to sight a gun on shipboard at a greater angle than fifteen degrees. Many commanders will not elevate the gun higher than twelve degrees. The reason for this is that the recoil of a gun at a higher elevation than twelve or fifteen degrees would do great damage. The gun-carriage would be broken, the electric apparatus would be destroyed, and about everything breakable on board would be smashed. On land, where there is no danger from the recoil, the angle of elevation may be higher, but even on land the greatest angle at which a gun has been sighted was in England during the queen's jubilee. At that time a gun, sighted at an angle of forty-five degrees, carried twelve miles. Now if the maximum elevation on shipboard be fifteen degrees, the maximum carrying distance of the largest guns would be about six miles. Therefore, vessels sent to bombard the city would have to be stationed in the Narrows, between Forts Wadsworth and Hamilton. Then, if they opened fire, the shells they dropped about, here and there, would be quite likely to incapacitate for further service whatever they struck.

"It must be remembered, though, that

before any vessel could get near Fort Wadsworth or Fort Hamilton, it would have to pass the defenses at Sandy Hook and over the submarine mines in that vicinity. Just at present the chances of a foreign fleet passing Sandy Hook are not bad. When the defenses are completed, however, I'd rather be up in a balloon without a compass than on a ship that tried to pass those defenses. Just where those mines are located is kept a profound secret in the War Department. In addition to the batteries on Sandy Hook, it must be also borne in mind that there are also batteries at Forts Wadsworth and Hamilton. These are not powerful batteries, to be sure, but they would do good service before they were silenced. In addition to these harbor defenses, the channel would be filled with sunken vessels, which would prove very obstructive to the ships of an invading fleet. Of course, all the damage done to the city would be in the lower part. Supposing the city were destroyed up to Canal Street, everything would be serene above that.

"But what would our own ships be doing all this time? We now have the battle-ship 'Indiana,' which is the equal in fighting qualities of any ship afloat. The 'Massachusetts' will be ready shortly, and we have the double turreted monitors 'Miantonomoh,' 'Amphitrite,' and 'Terror,' which could be got ready for sea in short order. The 'Indiana' and 'Massachusetts' are equipped with 12-inch guns in addition to the smaller armament, and the monitors have each four 10-inch guns. These monitors have so little freeboard that a battle-ship would be bothered to silence their guns. Then there is the ram 'Katahdin.' To be sure, we don't know much about her yet, but she can be counted on for some service. The cruiser 'New York' should also be included in the list of our defending fleet.

"Of this British flying squadron that has just gone into commission the only vessels we would need to concern ourselves much about, should its destination be America, are the battle-ships 'Revenge,' 'Royal Oak,' and 'Royal Sovereign.' These vessels are all battle-ships of the first class, and are alike in construction. They are a little faster than either the 'Indiana' or the 'Massachusetts,' but the combination of armor and armament on our vessels is supposed to make the American ships superior to the English."

Equal to the Occasion.

(*From the Home Journal.*)

ALEXANDER DUMAS'S ATTEMPT AT A JOKE ON MEISSONIER'S GARDENER.

On his superb estate at Poissy the artist Meissonier had an extremely skillful gardener. Jacques knew all the vegetables, trees, shrubs, and flowers, and could give their names both in Latin and French. His extraordinary powers were a source of astonishment to his master's friends, who were given to teasing the worthy workman, but never caught him napping. One day M. Alexander Dumas brought Jacques a package of mysterious seeds which were absolutely new to him,—little reddish balls, something like millet-seed, but in reality herring's eggs.

"All that I can tell you," said the dramatist, "is that the plant is very fond of water." A few weeks later M. Dumas, again visiting Poissy, inquired of the gardener concerning the success of the seed.

"Oh, monsieur," replied Jacques, "it far exceeds my hopes. I think it is because I have watered the plants so often. But come and see for yourself."

Whereupon the gardener exhibited to M. Dumas's astonished gaze several rows of herring snouts protruding proudly from the earth.

The retort was hugely enjoyed by Meissonier's acquaintances, and by none more than M. Dumas himself, who, being witty, can appreciate the wit of others.

The Mikado and the Admiral.

AN AMERICAN SAILOR THE FIRST TO BE RECEIVED BY THE JAPANESE RULER STANDING.

When, in the early summer of 1874, Rear-Admiral Pennock arrived in Yokohama to take command of the American Naval Squadron in those waters, he at once took steps towards paying his respects to the Mikado. Now, it happened

that all the foreign ministers accredited to Japan were absent and every legation in Tokio was presided over by a subordinate. This was a state of things quite to the liking of the subordinates, and, led by the British Chargé d'Affaires, who was dean of the corps, they decided it a favorable moment to exact a concession from the Japanese.

They concocted their plan, and then intimated to the Japanese Foreign Office that in their opinion the Mikado should hereafter stand upon his feet when receiving the representative of a foreign government, in accordance with the manner of European courts, instead of remaining seated, as in the ancient native custom. This suggestion was put as nearly in the form of a demand as they dared, and the answer was being awaited by the diplomats when the American flag-ship sailed into the harbor of Yokohama.

The admiral knew nothing whatever of this subaltern scheming, and had not learned of it when, with one of his officers, he went up to Tokio, a day or two later, to pay his respects to the Japanese Secretary of State. When an American naval officer goes away to take command of a foreign station he is always invited, or seeks an opportunity, before leaving Washington, to meet the President, and receives personally a message of polite good wishes from the United States to all the rulers likely to be met abroad. This ceremony constitutes the officer a personal representative and emissary of the President, and not only entitles him to be received personally by a foreign ruler, but makes it incumbent upon him to seek such recognition.

Count Soyeshima, who was then minister of foreign affairs, and had just returned from his sucessful mission to China regarding the Formosan affair, welcomed the two officers with the utmost urbanity, and kept an interpreter busy in courteous inquiries and remarks. The admiral explained that he had been charged by the President of the United States to bear a message of personal and political friendliness to his Majesty the Mikado, and desired an early audience for that purpose. Soyeshima replied in appreciative terms, but was exceedingly sorry to say that his Majesty was ill and that his cabinet wished him for the present to avoid all possible fatigue. Then smiling blandly, the secretary talked of the wonderful public school system of the United States, and for twenty minutes expatiated upon educational progress in Japan.

The admiral gradually brought him back to the point in view, and was civilly informed that, although the commander of the British Asiatic fleet had been received only a short time before, the audience-chamber of the palace was now being refitted, and it would probably be some time—well, to tell the truth, probably several months—before it would be in proper condition for any royal reception. This was extremely regrettable but—— And so the old fox led the chase away again to talk about agriculture, and so forth, and it was half an hour before the admiral could politely return to his errand sufficiently to say that it would be impossible for him to wait that length of time, or to agree to return; and that he felt anxious to learn, in order that he might make a satisfactory explanation to his government, the real obstacle in the way of granting his request.

By this time it was plain to both the visiting officers that, although the Mikado was really in poor health, and the palace undergoing renovation, yet the secretary was manœuvring towards something or other beyond their comprehension. But the wily diplomatist led them off on a third conversational excursion into nowhere, until suddenly, as if at last satisfied with his scrutiny, he laid one hand on the admiral's knee, and looking straight into his face, too squarely to admit of any dodging, fired point blank the question up to which he had all the time been figuring,—

"Would you, Admiral Pennock, insist that the Mikado should stand upon his feet while he received you?"

The blank astonishment in the old officer's face revealed to the Japanese official that his visitor had had no part in the obnoxious proposals of the Chargés d'Affaires, and he hastened to add,—

"The gentlemen of the foreign legations have lately attempted to show us that our ancient court custom is all wrong and disrespectful, and half threaten that

it will no longer be tolerated. What do you think of it?"

The admiral's eyes blazed with surprise and sturdy contempt for diplomatic flummery.

"Shall I insist that his Majesty stand? Certainly not! If he will do me the honor to receive me as he has received others of my rank, it is not for me to say where or how the ceremony shall be performed. The customs of your court are quite good enough for me."

Soyeshima's face brightened instantly. It was no longer inscrutable, but frank and cordial.

"How many persons do you wish to bring in your suite?" he asked.

"How many came with Admiral Blank?"—the British officer lately received—was the interrogatory reply.

An under secretary was referred to, and reported that the number was seventeen. Admiral Pennock considered the matter a moment, thinking how many suitable officers he could gather from his few ships, and announced that his staff would consist of nineteen. A few more words closed the interview, and the officers returned to the "Hartford." That same evening they were waited upon by a messenger from the palace bearing an invitation from the Mikado to an audience three days later. At the appointed time the admiral and his staff presented themselves at the palace, where a small outer building was to be used as the temporary audience-room. As the moment approached when they were to enter the royal presence, Count Soyeshima came in, arrayed in gorgeous official robes, and advancing to Admiral Pennock with plain disregard of the Chargé d'Affaires who was present, as usage required, said to him impressively,—

"The Mikado proposes to pay to the United States to-day a peculiar compliment. He is mindful of the manner in which a Japanese envoy who was introduced to your President would be received, and he proposes to-day, for the first time in the history of Japan to rise upon his feet and reply standing to the message you bring. Please follow me."

They passed into an apartment at one end of which a space was walled off by an almost transparent screen of delicate sandalwood filigree. Behind this screen sat the Mikado looking pale and feeble. When the presentation by Count Soyeshima and the reading of Admiral Pennock's short address had been concluded, the Mikado, supported by an attendant, rose to his feet and remained standing while he made a short reply, after which he resumed his seat and the American officers retired. Thus the Mikado honored the honest respect and friendliness of an American sailor and rebuked the diplomatists, while he cleverly took a a new step towards that conformity with the civilized world in form as well as substance, which has been his steady ambition.

International Poker.

(*From the Pall Mall Gazette.*)

AN ENGLISHMAN'S TWO PAIRS WERE GOOD BECAUSE THEY WERE TWO PAIRS OF KINGS.

"Some one suggested that a game of poker might finish the evening in an appropriate manner," said the major, "and I intimated my willingness to lose three or four hours for the good of the party.

"Then some one else suggested that the game might be played at my quarters. To this I made no objection, and not long afterwards we were sitting at a round table ready for business.

"There were five of us, and I kept the bank. There were several nationalities represented in the quintet. On my left sat a Scotchman, who, naturally being a cautious man, said he did not know much about the game. Everybody smiled pleasantly, and the other old hands made up their minds to play close to the breast bone. On my right sat an American.

"He did not say anything about the character of his play, being aware that nothing he could say upon that point would have any effect upon the rest of us. Next to him sat an Englishman. Having taken chips to the value of five pounds, he said, 'I would like a little information before we begin.'

"Thinking that he considered this the proper thing to say, nobody responded, and we prepared to cut for deal.

"'But I'm not joking,' said John Bull;

'I really never played the game in my life.'

"The rest of us looked at him, and saw that he was in earnest.

"'If that's the case, old man,' I said, 'you had better not come into the game, because there are two or three warm people sitting at this table.'

"'But I want to come in,' he said, 'for a man must learn poker sooner or later, and I'd like to begin to-night. Just mark the value of the hands on a piece of paper, and I'll soon pick the game up.'

"I did not like the idea of playing with a man who really knew nothing of the game, particularly at my own rooms, and I intimated as much. He persisted, however, and as five players make an enjoyable game, I said no more. The American who sat on John Bull's right marked the value of the hands on a sheet of paper and passed it around. It was all right, and the Englishman took possession of it and proceeded to learn it by heart.

"The limit was put at five shillings, and the game began. For an hour very little money changed hands, and although John Bull showed a marked, I might almost say a reprehensible, proclivity for coming in every hand, he held his own. Towards the finish of the second hour John Bull and I were gaining perceptibly, and the other players were occasionally dropping ejaculations about their hard luck, the curious way in which the cards ran, and so forth.

"In the middle of the third hour there was an intermission of five minutes for refreshments.

"An intermission in poker is not like any other kind of intermission. The only difference between it and the usual mode of play is that you occupy one hand with food and drink and continue to play with the other. The beginner, however, looks at the refreshments at odd moments, whereas the old hand keeps his eyes on the cards.

"Finally the remains of the frugal feast were removed, and we went at it again with fresh vigor. During the evening the hands had been moderately good, but nobody had held anything startling. Finally after we had been playing for nearly four hours, I picked up a hand that seemed to promise well, if the others held anything at all decent. It was my turn to deal. There was a raise all round before the draw.

"Everybody drew three cards; I drew three to a pair of jacks, and in the draw I got two more jacks and an ace. The combination struck me as wealth-producing.

"It was the turn of the American who sat on John Bull's right to bet. He said something and threw down his cards. John Bull at once showed him his hand. The American, who is known to his friends as the 'Sylph,' because he weighs a trifle over eighteen stone, looked at the cards in a casual way and whispered something. John Bull immediately bet the limit, five shillings.

"It is a small game, of course, but at it you can drop twenty pounds with great facility in the course of three or four hours. The American on my right dropped out I raised John Bull the limit. The Scotchman dropped out. This left only John Bull and myself in the game. I felt sorry for this, as I did not care to take his money. He seemed to be in no way anxious about the result, and immediately raised me back. Every raise added a half-sovereign to the pot, which gradually began to assume pleasing proportions.

"After four or five raises I thought the thing had gone far enough, as John Bull was a beginner and we were playing at my rooms, so I said, 'I'd go a bit slow, old man. Remember this is your first experience at poker.'

"'That's all right,' he said, and threw another half-sovereign in the pot.

"Of course there was nothing for me to do but raise him back. At first I thought he had a full house, but when he continued to raise so cheerfully, I concluded he had small fours. Finally, the American on my right looked at my hand. Then he looked at John Bull's cards. Then he whispered something to the other American and went and laid himself down on a lounge.

"After we had raised each other ten or fifteen times, John Bull bought a fresh lot of chips. I did not hand them over without a remonstrance.

"I said, 'Don't forget that I have

played poker before and this is your first game.'

"The American who was lying on the lounge tried to bite off a laugh, and snorted.

"I said, 'What's the matter?' He said, 'I'm laughing at your efforts to dissuade him from playing to the full strength of his hand.'

"Then he laughed again. This rather nettled me, and I said, 'I don't want to dissuade him from playing to the full strength of his hand. I'm merely trying to prevent him from playing above its full strength.'

"The man on the lounge began to laugh in a manner that struck me as ridiculous, and the 'Sylph' coughed two or three times in a suspicious manner, as if he, too, had considerable trouble to restrain himself. John Bull, in the mean time, came back at me every time I raised. I stood this for some time, and said, 'Remember, old chap, don't blame me if you lose your money. I don't want it.'

"I had no sooner said this than the man on the lounge rolled off it and fell to the floor. He got up with tears running down his cheeks and made his way into the bedroom. There he threw himself on the bed and yelled. It wasn't laughing, it was yelling.

"The 'Sylph' left his chair and leaned against the wall in a corner. He shook so hard that the glasses on the sideboard jingled, and he said, 'Oh, dear! Oh, dear!' like a man who was about to die of heart failure.

"I said to myself, 'They can't be trying to draw John Bull on; they would never attempt that at my rooms.' Then I gave the problem up.

"The Scotchman at last became interested. He had been sitting tight, first looking at John Bull and myself, and then at the two who were laughing fit to split their sides. Finally he got up from his chair, and in a whisper asked the 'Sylph' what all the row was about. The 'Sylph' could not speak, but walked into the bedroom. There he was followed by the Scotchman.

"There I could hear a muffled conversation, and then the trio began to roar. Whenever I suggested to John Bull that he might regret his evening's experience the three would break into roars of laughter.

"Finally John Bull got to the end of his last pile, and, putting the last crown in the pot, said, 'I call you. What have you got?'

"Hearing this the others rushed into the room, but were quiet as they looked at me. I looked at the pot. I did not, reach for it. I did not want to be in a hurry, for I felt it was mine.

"'I've got four jacks,' I said.

"John Bull replied, 'I've got four kings.'

"Then the others began laughing like so many hyenas, and only then did I understand why they had done nothing else for some time.

"It took me a little while to see the humor of the situation, but I finally did. And the most painful feature of the affair was that John Bull thought he was betting his money on two pairs. He had simply followed the advice of the 'Sylph,' who, upon seeing his cards, advised him to 'bet until he was dead.' He did not go quite so far as that, which was a good thing for me."

"That was an occasion, major," said one of the listeners, "when you mistook the strength of your hand."

"No, sir," replied the major; "I made no error about the strength of my hand. It was the strength of the other man's hand I mistook."